

Roman Infantry Helmets



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ILLUSTRATED BY GIUSEPPE RAVA

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Series editors Martin Windrow & Nick Reynolds

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INTRODUCTION

A Roman soldier's helmet was, unsurprisingly, one of the most important parts of his panoply. Indeed, deliberately discarding a helmet was viewed as problematic:

It is a serious crime for a soldier to sell his arms, and it is considered equal to that of desertion where he disposes of all of them; however, if he only sells a portion, his punishment will depend upon what he sold. For if he sells the armour for his legs or shoulders, he shall be punished by scourging; if, however, he sells his breastplate [*lorica*], his shield [*scutum*], his helmet [*galea*], and his sword [*gladius*], it is as if he is a deserter. (Justinian, *Digest* 49.16.14.1, citing Paulus, *On Military Punishments*)

To attempt to summarize the development of such a key piece of equipment – ironically, largely deliberately discarded, as will become apparent – in one small book is a daunting task and is made no easier by the close attention and strongly held opinions that helmets inevitably attract from those with an interest in Roman arms and armour.

The classification of Roman helmets has to some extent been hampered by a lack of agreement on precisely how that task should be undertaken. A long-standing system favoured by European scholars, employing the traditional archaeological methodology of type-site nomenclature (e.g. 'Weisenau type', named after a find from the Weisenau district of Mainz, Germany), came to be challenged by a new, interpretative system (e.g. 'Imperial-Gallic type C') pioneered by one of the leading scholars of both oriental and Roman armour at the Tower Armouries in London, England, Henry Russell Robinson, who thought he could detect development within a range of types of infantry helmets from the periods of the Republic and the Principate. Robinson's classificatory system has largely found favour in the anglophone world. Helmets are still (with varying degrees of success)

categorized according to his groups of Montefortino, Coolus, Agen/Port, Imperial-Gallic, Imperial-Italic and Auxiliary Infantry. His system did have the benefit that it isolated two different (and readily identifiable) groupings that fell within the broader category of Weisenau: those with ‘eyebrows’ (the Imperial-Gallic) and those without (the Imperial-Italic). His classification of cheek pieces is similarly problematic, not least because a proportion of helmets with surviving examples seem not to possess originals, but rather retrofits. Robinson did not attempt to classify the infantry helmets of the Dominate.

Robinson made various assumptions about helmet design and manufacture that cannot always be substantiated from the archaeological record. Who decided what changes were to be made and how was this information communicated around the empire? Why were some helmets assembled out of particular metals when others were not? Robinson’s system also constricted new finds, by forcing them into his order when they might not necessarily fit comfortably. There is also the fact that he seemingly misidentified an entire subset of late-2nd/early 3rd-century AD helmets (the Niederbieber-type helmets he included within his Auxiliary Cavalry category) as having belonged to mounted troops. That said, seriation – the subjective process of arranging artefacts in what seems to be a logical order of development – has a long history in archaeology, but is only truly of value if fixed dates are available for at least some of the components of such a typology. Typologies only ever really work on a fixed dataset and, once let loose in the real world, start to disintegrate as new evidence inevitably reveals that the situation was more complex than envisaged in the original model. So long as that is borne in mind, typologies have their place.

The classification of helmets from the Dominate was developed in a collaboration between various scholars, coordinated by Hans Klumbach, who termed them *Gardehelme* (literally ‘guards’ helmets’). Two principal types were defined, one for cavalry (due to the association of several of them with items of horse harness) and one, less substantial, for infantry (Klumbach 1973: 9). As will become apparent (see **One of two Intercisa-type ridge helmets**), certain assumptions were made about these too, most prominently that a higher level of decoration can always be equated with rank and station. While broadly true, applying such subjective assessments without due caution may be unwise.

The most recent classification of helmets, that of Professor Thomas Fischer (2019: 102–21), is arguably the most useful. This classification elaborates on the earlier type-site system, by introducing variants on the main type. Thus a Robinson Imperial-Gallic type A helmet is a Fischer Weisenau type (Nijmegen variant). For the sake of compatibility with other, earlier works, when a Fischer type is mentioned, a Robinson equivalent is provided (if it exists).

Fortunately it is possible to ignore much of the tedious argument over how a helmet should be referred to now and still produce a productive discussion of the way in which Roman infantry helmets developed, the manner in which they were produced and how they were used. There are, however, other aspects of the archaeological record and how it relates to the study of helmets that need to be touched upon.



Depiction of a Dominate infantryman wearing a crested ridge helmet from a fresco in the Via Latina catacomb in Rome. (Photo © J.C.N. Coulston)

Most existing Roman helmets are unprovenanced, insofar as their precise origin and any pertinent dating evidence have been lost. This may be because they have come onto the art market from a dubious source or have lost their provenance with time. Others have what might be termed a vague or ambiguous origin, typically so finds from watery locations such as rivers or bogs. The increase in dredging of major European waterways during the 19th century led to many finds of contextless helmets. These might be in comparatively good condition, from the point of view of preservation, but only have circumstantial evidence as to their dating, perhaps from

ownership inscriptions or decorative details that can be identified, or even just by association with a nearby fortification with a known period of occupation (the military base at Mainz-Weisenau, for instance, seems to have been used in three distinct phases, namely *c.* AD 9–17, 39–45/46 and 83–86). There is also a presumably lucrative trade in fakes, partly driven by a persistent hunger in the art market for unprovenanced (and, occasionally, provenanced) genuine helmets. This has especially been the case since the advent of a market for low-cost replica equipment, mass-produced for re-enactors. These can be ‘aged’ enough to fool some, although ironically re-enactor equipment often tends to be better made than Roman originals and gives itself away through symmetry and neatness of finish.



Copper-alloy Etruscan Montefortino helmet now in the Metropolitan Museum of Art (New York) with both cheek pieces and dated to the late 4th century BC. (Metropolitan Museum of Art/Public Domain)

Ultimately the study of Roman infantry helmets depends upon excavated examples (and sometimes just components) that come with good contextual dating evidence. These finds will frequently (but not always) be in a much worse state of preservation than those from watery locations. There is thus a tendency to follow Robinson (1975: 46) and take the skeleton of helmet development provided from excavated examples and interpolate the

unprovenanced examples to make a satisfying, if academically questionable, sequence.

There are three types of damage that could occur to a helmet. Pre-depositional damage includes battle damage that could be repaired, failure of components or even some form of misuse. Peri-depositional damage would principally consist of unrepairable battle damage, rejected recycling or anything happening as the helmet actually entered the archaeological record (e.g. being crushed under rubble). Finally, post-depositional damage would most notably include corrosion or any disturbance that might occur once a helmet has been discarded. Obviously, a helmet retrieved from the archaeological record could exhibit any, or even all, of these types of damage.

ORIGINS

Little is known about early Roman infantry helmets. It is usually assumed that there were similarities with Etruscan and neighbouring Italian examples, often heavily influenced by Greek helmets of various types. It is an assumption, however, simply because the archaeological evidence does not survive to provide a clearer picture and the notion that Roman equals Italian is perhaps too easily resorted to in the literature. Thus, while Chalcidian, Villanovan, Negau, Attic and Etrusco-Corinthian helmets all had their parts to play in the armament of Italian peoples, it is impossible to say if any or all of these were used by the Romans. Most weaponry that is found from the first centuries of Rome's existence comes from burials of warriors belonging to the social elites of peoples around Rome. Information about the equipment of the ordinary warriors is thus archaeologically non-existent and largely dependent upon descriptions that historians writing centuries later have preserved. It is therefore a very different picture to that presented under the Principate, when (by comparison) vast amounts of military equipment found its way into the archaeological record, and that in turn was a result of the way in which equipment was produced, distributed, used and deposited.

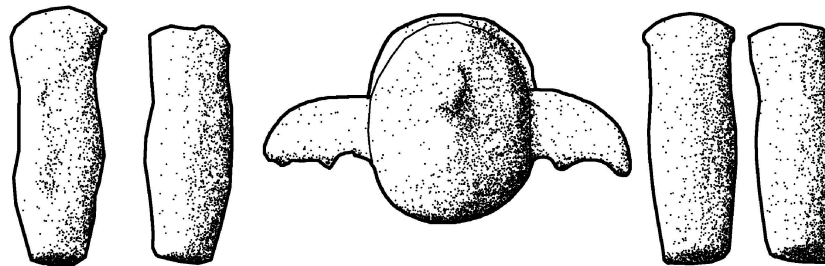
The first indisputable infantry helmet of the Roman Army was the Montefortino type and that is where this book will begin. It is entirely conceivable that, one day, an archaeological discovery will supply better information about what Roman soldiers wore before they adopted the Montefortino helmet, but it has not yet happened. Nevertheless, in what

follows, a common theme will be detectable: the prototypes for Roman infantry helmets were invariably helmets used by enemies or allies. The Romans were great adopters and adapters, as Arrian noted (see **Republican Infantry Helmets**).

TERMINOLOGY

Two main Latin words were used to refer to helmets: *cassis* and *galea*. Sadly, the distinction between the two, if there even was one, has been lost in some muddled thinking by ancient writers exploring the etymological roots of the terms, combined with literary historians (such as Tacitus) using the terms for artistic effect as much as for accurate description. The 6th/7th-century AD writer, Isidore of Seville, provided the following comment in his etymological essay on warfare: ‘The helmet [*cassis*] is of sheet metal or leather [*galea*], leather caps being called *galeri*. However, the *cassis* was so termed by the Etruscans; for they called the helmet *cassis*, I believe, from ‘head’ [*caput*]’ (Isidore, *Etymologiae* 18.14, tr. author). The interchangeability of *cassis* and *galea* in ancient writers is nicely illustrated in a passage from Tacitus: ‘A few only have body armour, and just one or two here and there a *cassis* or *galea*’ (Tacitus, *Germania* 6, tr. Church & Brodribb, amended author). Vegetius likewise happily mixed the two terms (see **Dominate Infantry Helmets**).

It might be tempting to follow Isidore and wonder whether this binary terminology had its origins in the materials used in the construction of helmets. Both copper alloy and ferrous metal (in most cases steel) were used for helmet bowl construction, but there is no convincing reason to suspect that *cassis* represented one type and *galea* the other. Virgil’s seemingly tautologous ‘The men gathered, and they received the drawn lot, cast from the bronze helmet [*galea aerea*]’ (Virgil, *Aeneid* 5.490–91, tr. author) only serves to confuse matters.



Relief from the Etruscan Tomb of the Reliefs at Caere (Italy) showing a Montefortino helmet between two greaves. The helmet is depicted with its cheek pieces splayed outwards, as if hanging on the wall. (Drawing © M.C. Bishop)

Sadly, the affectations of aristocratic writers, when combined with the musings of a Late Roman scholar, do not necessarily advance the study of helmet terminology very far beyond noting that both *cassis* and *galea* could be used to denote a helmet.

REPUBLICAN INFANTRY HELMETS

Writing in the 2nd century AD, the Roman Army commander and historian, Flavius Arrianus (Arrian), noted the Romans' practice of adopting (and adapting) the methods and technologies of others:

Indeed, if the Romans deserve praise for any quality, it is for not loving solely their own customs and heritage, but rather for choosing the best practices from everywhere and making them their own. Thus, you may observe that some weapons, although borrowed from others, are now called 'Roman' because the Romans have mastered their use. (Arrian, *Techne Taktike* 33.2–3, tr. author)



A ship's bronze ram recovered from the site of the battle of the Aegates (241 BC) incorporating a cast representation of a Montefortino helmet with a three-feather crest of the kind described by Polybios. (Finoskov/Wikimedia/**CC BY-SA 4.0**)

The classic Republican Roman infantry helmet was the Montefortino type, named after 12 examples found in a Gallic necropolis dating from the 4th to

3rd century BC at Montefortino, in eastern central Italy (Brizio 1901: 748–54). While Gallic examples originally had triple-disc cheek pieces, the form of the bowl was that subsequently adopted by the Romans. The Montefortino type has long been included in an informal grouping known as ‘jockey cap’ helmets due to its resemblance to a jockey cap worn back to front and it will sometimes be found referred to in this way in the literature. The other major type included within the jockey cap group is Robinson’s Coolus type of helmet, which has enjoyed a variety of alternative names, most prominently Haguenau/Hagenau (after a Principate-era riverine find from the French Rhineland town of that name). To these should be added the Mannheim type, another Late Republican ‘jockey cap’ helmet type, as well as the rather different Agen/Port helmets, some of which may have seen some service with the Romans in some capacity.



Late Coolus/Hagenau helmet of copper alloy from Haguenau (France) itself, with a broad neck guard, brow guard, soldered crest knob and a plume tube on the side of the bowl.
(Pascal Radigue/Wikimedia/[CC BY-SA 3.0](#))

Montefortino helmets are shown hanging on the walls of the Etruscan-era Tomb of the Reliefs at Caere (Italy). A fresco from the Esquiline necropolis

in Rome shows one individual wearing a helmet that might be intended to represent a Montefortino helmet, but the fresco is badly damaged and by no means clear. Representations of the Montefortino helmet in Roman service vary in quality, but few are finer than those depicted on rams from ships from the Egadi Islands, lost in the battle of the Aegates (241 BC), off the west coast of Sicily (Italy). Some of the rams (Egadi 7, 8 and 10) incorporated a design on the stem depicting a Montefortino helmet with plumes in high relief (Goldman & Rose 2019: 167–68). Unfortunately, the Roman soldiers on the Monument of Aemilius Paullus at Delphi (Greece) are too eroded to reveal any details of their helmets beyond the fact that they are wearing them. The so-called Altar of Domitius Ahenobarbus from Rome (Italy), however, includes a number of legionary soldiers who wear what look to be crested Montefortino helmets. A funerary *cippus* from Aquileia (Italy) probably dates from the 1st century BC and is shaped to mimic the form of an Aeneas/Port helmet, complete with a bow tied under the cheek pieces.

HISTORY

The arrival during the 7th–6th centuries BC of Gallic peoples in the north of the Italian peninsula (Livy, *History of Rome* 5.34), sometimes referred to as the Cisalpine Gauls, saw them bringing with them their weaponry and military technology. The appearance of Montefortino-type helmets among both Gallic and Etruscan grave goods provides a likely path for adoption by the Romans, via their Etruscan rulers and/or Gallic mercenaries, in the early days of their city-state history (Taylor 2020).



Column base relief from Mainz depicting an auxiliary running. The flat, projecting neck guard suggests he is wearing a Coolus/Hagenau-type helmet. There is a brow guard and edged cheek pieces, but no cut-out for the ear. (Photo © M.C. Bishop)

The exact date of adoption of the Montefortino helmet by the Romans is unknown, but the finds from the Egadi Islands helpfully supply a fixed *terminus ante quem* for the type being in use. As well as the depictions on rams from the site, a remarkable collection of Republican-era helmets has been recovered by marine archaeologists from the Egadi Islands off the north-west corner of Sicily. This, a naval battle between Roman and Carthaginian forces during the First Punic War (264–241 BC), led to bronze rams from sunken vessels on both sides, together with helmets (and some other equipment) belonging to their crews, being deposited on the seabed.

The discovery of the helmets (and the representations of them) from the Egadi Islands should be seen in the context of Montefortino helmets from elsewhere, but most particularly the Iberian Peninsula, which has produced a considerable number of them. Quesada Sanz (1997) has noted that there are a number of separate groups from this source: those from Catalonia and Murcia from the 4th and 3rd centuries BC; those from indigenous contexts in the 3rd and early 2nd centuries BC but derived from Roman and Carthaginian troops; helmets from Roman contexts of the 2nd and 1st centuries BC; and finally, a small group from Galicia and northern Portugal that may derive from Augustan campaigning in that region.

Montefortino helmets even spread out around the Black Sea littoral during the Late Republic, possibly through supply of the helmets (and other equipment) to allied nations or through Roman action during the Mithridatic Wars (88–63 BC) (Negin 2019).

Although the Montefortino type was the main legionary helmet of the Republican period, it was joined in the later period by the Coolus/Hagenau and Mannheim types. These were helmet forms derived from contact with Gallic tribes, although (despite the fact that most examples from Roman contexts seem to date to the Early Principate) they seem to have been adopted during Caesar's Gallic wars (58–50 BC), if not before. As Fischer notes (2019: 105), although Robinson ignored the Mannheim type, possibly because he held it to be a native form, an example from a Roman shipwreck near La Madrague de Giens (France) is dated to the first quarter of the 1st century BC. This was found together with Roman pottery, coins and a Montefortino-type helmet.

DESCRIPTION

Montefortino helmets were usually made of copper alloy, although pre-Roman iron examples are known, as with a piece from the Montelucre necropolis, Predio Ara, Perugia (Italy). The bowls were oval and essentially sub-spherical in form (most are slightly larger than a hemisphere) and invariably rise to a point, where the crest knob was located. They were equipped with a short neck guard formed by extending the line of the brim and sloping slightly downwards from the bowl itself. The brim itself was thickened in comparison with the bowl and usually decorated. In Roman service, cheek pieces were flat with two scalloped indentations towards the front and were hinged to the bowl at the side by means of a hinge plate fixed with one or two rivets. Three attachment points – one near the bottom of each cheek piece either on the inside or protruding externally beneath the plate while attached behind and one in the centre of the underside of the neck guard – served to allow a secure means of fastening the helmet to the head by means of a single leather strap (see **Carriage**). Republican-era Montefortino helmets did not have brow guards, although they were introduced in the Early Principate.

The Puglia Montefortino helmet

Paddock's refinement of the Montefortino helmet typology saw his types VI–XII as being Roman. Almost inevitably, the finest examples of Montefortino helmets, complete with cheek pieces, are unprovenanced.

Dated to the 4th/3rd centuries BC, reported to originate in Puglia (Italy) and now in the possession of the British Museum in London, which purchased it from Alessandro Castellani in 1873, this helmet (1873.0820.226; Paddock 1993: Cat. No.191) retains both of its cheek pieces. It conforms to Robinson's type A and Paddock's type II and, although probably not actually Roman, it is the sort of helmet that was initially adopted by Roman legionaries in the 4th/3rd centuries BC.

The helmet is 370mm high (inclusive of cheek pieces), 260mm long and 200mm wide and is bulbous in shape, evidently manufactured in one piece with the short neck guard protruding to the rear. The lower, thickened rim, including the neck guard, is

decorated with a moulded cabling design. There are incised lines around the base of the bowl, passing over the neck guard and across the neck guard itself. There is a hemispherical crest knob at the apex of the helmet bowl decorated with two (and a partial third) rows of arcaded moulding, overlapping upwards.

The cheek pieces are bicuspid (they have two indentations at the front approximating to the positions of the eyes and mouth) to maximize vision and communication and have a raised border. They are attached to the bowl by hinges secured with two rivets.



Copper-alloy Montefortino helmet now in the British Museum (London) with both cheek pieces, originally from Puglia (Italy) and dated to the 4th century BC. (Photo © Trustees of the British Museum)

Coolus helmets were also made of copper alloy. They likewise had a small neck guard, but they differed in that the helmet bowl was closer to hemispherical in shape, with a crest knob often being soldered in place, rather than integral with the bowl as with the Montefortino type. Pre-Roman cheek pieces differed considerably from Roman examples of the

Coolus helmet, but that was the main distinction between the two versions of the helmet.

Agen/Port helmets, which Robinson saw as the antecedents of his Imperial-Gallic variant of the Weisenau type, were by contrast fabricated from iron. These variously incorporated neck corrugations, eyebrows and incipient brow guards in the form of out-turned rims that provided similar protection from downward blows.

VARIANTS

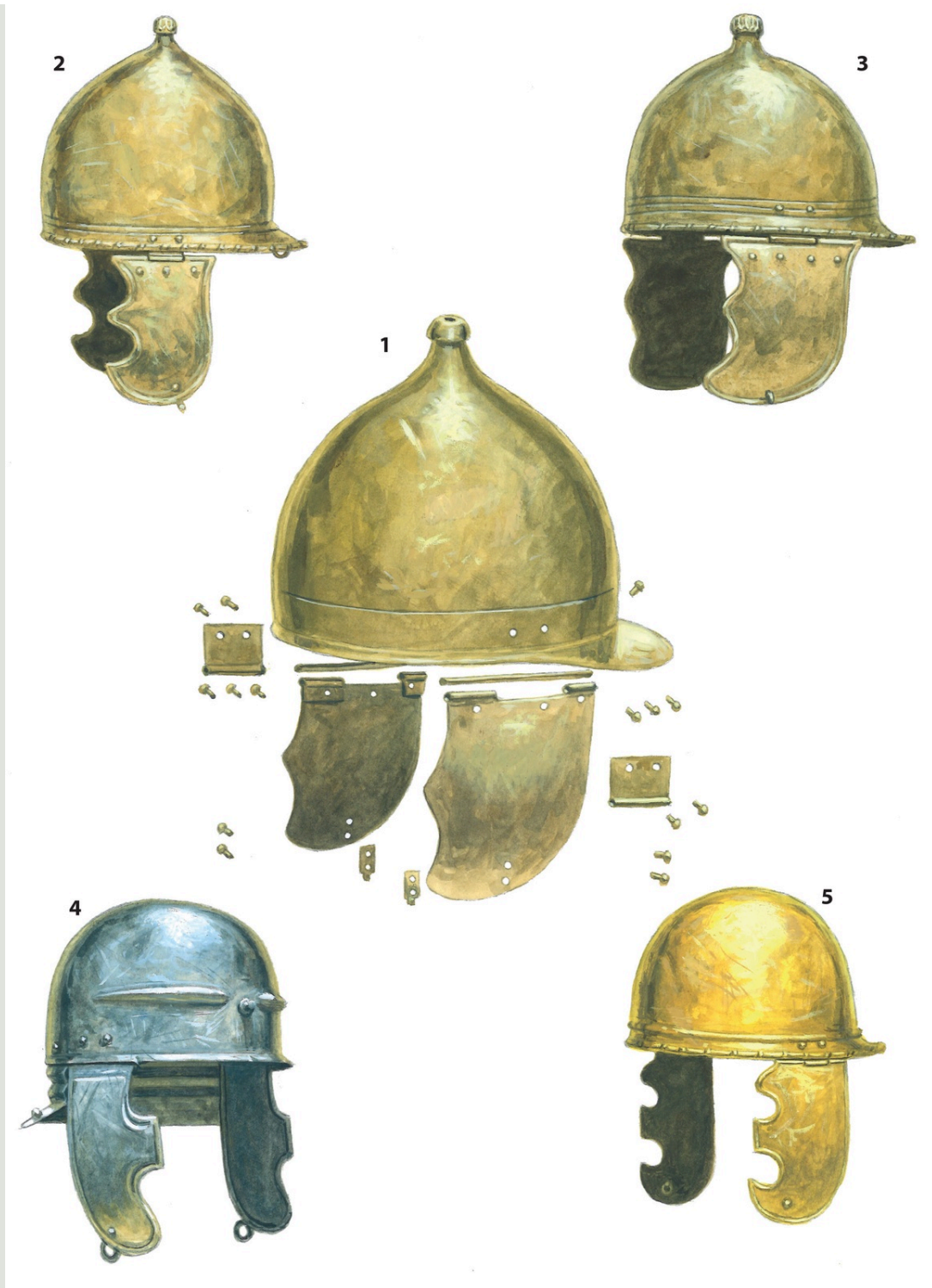
It seems that many typologies have been produced for Montefortino helmets over the years and all have their strengths and weaknesses. Robinson (1975: 17–18) identified four basic variants (his Montefortino types A–D) but Paddock (1993: 508–20) went much further, describing 12 forms (his types I–XII), of which I–IX and possibly X may be Republican in date. He also placed those 12 types into four groups (not the same as Robinson's, however) based on the form of the crest knob. Quesada Sanz pointed out (1997: 159) how an inscribed helmet that was almost certainly Roman was paralleled by examples from indigenous contexts in Iberia.

Paddock's typology of what he believed to be Roman helmets began with his type VI (3rd/2nd century BC). This has a high conical bowl surmounted by a truncated, conical, decorated crest knob, a deep, flattened neck guard and a moderately thick rim with a narrow cable motif with six rows of fluting (with two or more rows of triangles). It has thick cheek pieces with an exaggerated bicuspid form, attached by hinges with two rivets. His type VII (3rd/2nd century BC) has a moderately straight-sided conical bowl with a short neck guard, thinner rim and is topped by a truncated, conical, decorated crest knob. There is a reduced cable motif with simple file cuts (with two or more rows of triangles). No cheek pieces survive and the hinges are attached with two rivets. Type VIII (2nd/1st century BC) has a bulbous bowl with near-vertical sides, a deep sloping or flattened neck guard and a rim that is still thickened but less so than before. On top of the bowl is a hemispherical, conical or truncated plain conical crest knob and there is slight cabling at the front of the rim but not on the neck guard. Again, no cheek pieces survive and the hinges are attached with two rivets. With regard to type IX (2nd/1st century BC), the finish is poor and it has a high bulbous bowl with near-vertical sides, a moderately deep, sloping or flattened neck guard and a rim that is still thickened but undecorated. The

plain crest knob is discoid or a truncated cone. No cheek pieces survive and the hinges are attached with a single rivet. Type X (undated), by comparison, has a moderately high, slightly bulbous, hemispherical bowl with a short, sloping neck guard with plain moulding on its edge and is delineated by two incised lines. The rim is still thickened but now undecorated. The crest knob is now separate and riveted to the bowl. No cheek pieces survive and the hinges are usually attached with two rivets. It is notable that only one type of Republican Montefortino helmet actually has cheek pieces associated with it.

A

TYPES OF REPUBLICAN INFANTRY HELMET



Most Republican helmets were made of copper alloy and were of fairly simple construction. All of the examples consist of a conical bowl with a pair of cheek pieces attached, one on either

side (1). The differences between Republican-era variants of this type were comparatively minor. All of these helmets were designed for the ears to be retained within the bowl and/or behind the cheek pieces. Examples of the Montefortino helmet of Paddock's type VI (2) have been found from the site of the battle of the Aegates in 241 BC. Paddock's type VII (3) was typical of the 2nd century BC, but all helmets could be found in later periods due to their longevity. Julius Caesar's campaigns in Transalpine Gaul meant new types of helmet were encountered, like the Port type made of iron (4) and the Coolus of copper alloy (5). From the form of its cheek pieces, the original Port find seems to have been employed in Roman service, but it is always possible that Roman designs were influencing indigenous tastes. This type was believed by Robinson to be an antecedent for the Weisenau-type (his Imperial-Gallic) helmets of the Principate era. All of the helmets depicted here show signs of light combat damage, none of it sufficient to render it necessary for them to be repaired or even scrapped.



Exterior (left) and interior (right) views of a right-side copper-alloy helmet cheek piece (WMID-B2F679) of the Coolus type from near Wall (England). (Photo © Birmingham Museums Trust/[CC BY 2.0](#))

Even the helmets from the Egadi Islands need not necessarily be Roman or even contemporary, as opposing forces could use their enemies' captured equipment (so some 'Roman' helmets might have been used by the Carthaginian forces or mercenaries) and some pieces were undoubtedly old when lost, as is known to have been the case during the Principate.

Coolus helmets were a Late Republican, possibly even Early Principate, introduction to the Roman Army. As with the Montefortino type, Paddock felt it necessary to re-assess the typology of Coolus helmets (see **Types of Republican Infantry Helmet**).



A late Montefortino-type helmet from Xanten (Germany), with a large neck guard and a brow guard, heavily influenced by the late Coolus/Hagenau forms. (Kritzolina/Wikimedia/**CC BY-SA 4.0**)

PRINCIPATE INFANTRY HELMETS

According to Robinson, ‘My classification is based on what I regard as the evolution of certain features that recur throughout the series: the eyebrows, the crest holder, the ear-guards, the cheek-pieces and the neck-guard’ (Robinson 1975: 46). The principal helmet types of the Late Republican period, the Montefortino and Mannheim/Hagenau (Robinson’s Coolus), unsurprisingly continued into the Principate. Examples of the latter from Britain, notably one from Bosham Harbour (with an oyster still adhering to its crown) and pieces from London and Berkhamsted, illustrate the continued use of the type after AD 43. A cheek piece belonging to one of these helmets is even known from Penkridge in the West Midlands of England (PAS WMID-B2F679), possibly dating to after AD 50. A number of Coolus/Hagenau-type helmets dredged from near the likely site of the Vetera II fortress close to Xanten (Germany) seem to date to the first half of the 1st century AD (Schalles & Schreiter 1993: 178–85). A Montefortino helmet from Buggenum (Netherlands), bearing an inscription of *legio XIII*, was once thought to date it to the time of the transfer of this legion back to the region at the time of the Batavian Revolt (AD 69–70), but opinion has swung to favour its earlier, Augustan deployment there. A similar helmet from near Xanten, at Wardt-Lüttingen (Germany), however, could well date from within the first third of the 1st century AD (Klumbach 1974: 20–21).

New types of helmet, perhaps first encountered during Julius Caesar’s campaigns in Transalpine Gaul and typified by the Agen/Port native helmet forms, introduced ferrous helmets into the Roman armoury for the first time (although, as noted above (see **History**), the Montefortino type had pre-Roman iron variants). Robinson (1977: 558–59) saw these as evidence of Gallic smiths working to produce weaponry for the Romans.



A Weisenau/Imperial-Italic D helmet from Leiden, Matilo-tunnel A4 (Netherlands) reconstructed from the copper-alloy components of more than one helmet. (National Museum of Antiquities, Leiden/[CC0 1.0](#))

The changing nature of the mechanisms of archaeological deposition mean that the Principate is the richest source for examples of Roman helmets, whether near-intact or in component form. This has much to do with the permanence of Roman forces at fortified sites and the way in which their system of maintenance and recycling operated (see **Maintenance**).

HISTORY

Three distinct phases of development are discernible for infantry helmets during the imperial period, broadly corresponding to what modern-day scholars would consider to be the Early, High and Late Principate. For the sake of convenience, these periods can loosely be classified here as Augustan to Trajanic (Early), Hadrianic to Commodan (High) and Severan to the beginning of the Dominate (Late). There is of course no guarantee that helmets could not continue in use beyond their period of manufacture. Likewise, the problem of archaeological residuality – discarded early components or even whole helmets occurring in later contexts – has to be

weighed against genuine instances of prolonged use (as hinted at by multiple ownership inscriptions on some objects).

The Early Principate

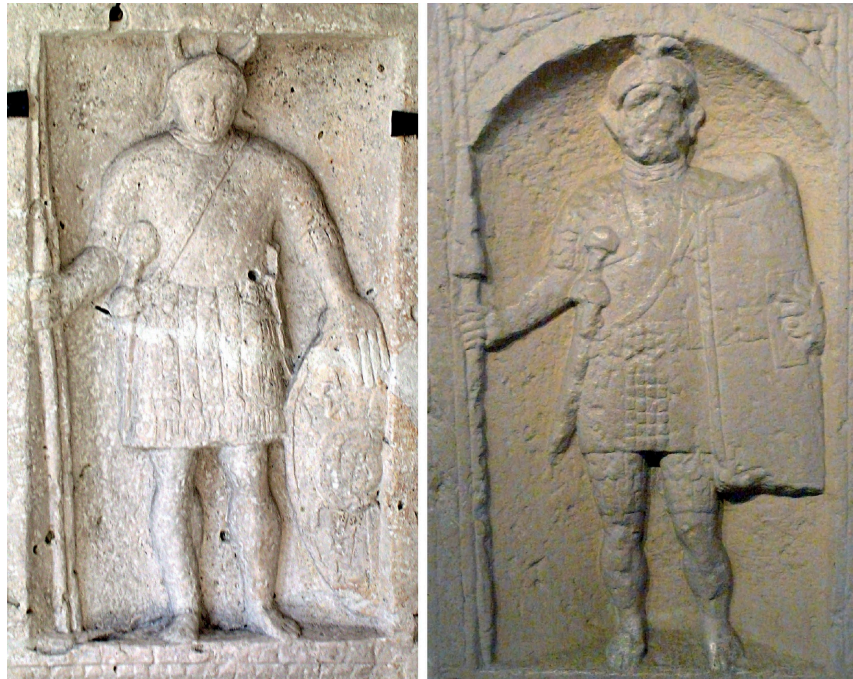
Although the Montefortino type continued into the Early Principate, and was joined by its sibling Gallic form, the Coolus type, the dominant form was the Weisenau, with its Imperial-Gallic and Imperial-Italic variants. It is notable that the Imperial-Gallic variants are those principally found from the Augustan campaigns in Germany. By the second half of the 1st century AD, the Weisenau form was ubiquitous in the West, although it should be pointed out that archaeological evidence for Roman helmets in the East still lags behind the West.



Details of the tombstones of the centurions Calidius Severus from Carnuntum (Austria, left) and Petronius Classicus from Ptuj (Slovenia, right) depicting transverse crests. That of Classicus clearly depicts feathers, while that of Severus is highly stylized. (Photos © Matthias Kabel/Wikimedia/**CC BY 2.5** and © J.C.N. Coulston)

Early Principate helmets are not often depicted on tombstones, as the trend (certainly in the pre-Flavian period) was to show the deceased bareheaded. The funerary altar of C. Firmidius Rufus of *cohors VI Praetoria* from Aquileia depicts his *gladius*, curved oval shield, *pilum*, *pugio* and a representation of what looks to be a late crested Montefortino helmet. This probably dates to the reign of Augustus (27 BC–AD 14), pre-dating the Praetorians' move to the *Castra Praetoria* in Rome under Tiberius. The tombstones of Castricius Victor from Budapest (Hungary) and Valerius Crispus from Wiesbaden (Germany) both show the deceased in crested and/or plumed helmets, but little detail is evident beyond neck guards. The tombstones of the centurions Calidius Severus from Carnuntum (Austria) and Petronius Classicus from Ptuj (Slovenia) depict helmets,

apparently of the Weisenau type, with brow bands and large cheek pieces, the latter including prominent ear guards and even tied laces.



Legionary tombstones of (a copy) Valerius Crispus (left, from Wiesbaden, Germany) and Castricius Victor (right, from Budapest, Hungary) depicting helmets with crests and (for Victor) side plumes. (Hartmann Linge/Wikimedia/**CC BY-SA 3.0** & © M.C. Bishop)

The pedestal reliefs from Mainz, thought to come from the headquarters building of the legionary fortress there, present some very interesting depictions of helmets. A running auxiliary infantryman (see **Column base relief from Mainz depicting an auxiliary running**) with an oval shield and some javelins is shown wearing a passable representation of a Coolus-type helmet. Two marching legionaries include one with his helmet slung from his neck (see **Stone relief from Croy Hill on the Antonine Wall**) and the corrugations on the neck guard mark this as a Weisenau-type helmet. Yet another such relief captures two legionaries in action, evidently intended to be wearing Weisenau helmets again, with dolphin outlines where Imperial-Gallic helmets might be expected to have ‘eyebrows’ (see **Mainz depicting two legionaries**). It was at first thought that this was a misinterpretation of the Imperial-Gallic helmet form, although when produced in a military context, it might seem odd that soldier-craftsmen would err in this way. The discovery of a series of helmet components from

Leiden (Netherlands) might cast doubt on this, as they included dolphin outlines. These have been reconstructed to represent a single helmet with the dolphins on the brows, but there remains some doubt over this interpretation.

The High Principate

Trajan's wars north of the Danube in Dacia at the beginning of the 2nd century AD were significant for Roman infantry helmet development, marked by what were evidently hasty modifications to deal with new threats, even though they were by no means the first ventures into this region for the Roman military. Later, Marcus Aurelius' wars north of the Danube against the Marcomanni were instrumental in the deposition of newer equipment. The movement of units around the empire to facilitate these campaigns often seems to have been accompanied by episodes of deposition, sometimes through abandonment of sites remote to the actual conflict. When units were drawn from far and wide, it was an opportunity to mingle that may well have led to cross-fertilization of ideas. This is how changes in helmet development occurred, rather than any form of centralized requirement or even 'pattern book'.



Stone relief from Croy Hill on the Antonine Wall (Scotland) depicting three legionaries, two of whom have their helmets slung over the front of their shields while the other appears to have his around his neck. (Photo © M.C. Bishop)

The First and Second Dacian Wars (AD 101–102 and 105–106) were also significant from the point of view of iconographic evidence, leading to the production of the Tropaeum Traiani at Adamclisi (Romania), probably by Roman military craftsmen and Trajan's Column in Rome, the work of metropolitan artists with a different agenda and methodology. Although metropolitan sculpted reliefs are generally unreliable when it comes to helmet depictions (there is a classicizing tendency to underemphasize the details of helmets in favour of optimizing the portrayal of the human face), the helical frieze of Trajan's Column occasionally strays into the realms of accuracy. Cross-piece reinforcements are depicted on some (but by no means all) helmets, and they are also shown on the Tropaeum Traiani metopes. There was no such attempt to show these details on the Marcus Column. Interestingly, the helmets of the legionaries on the Croy Hill (Scotland) relief, which are viewed from the top downwards, due to their

being suspended rather than worn, feature prominent neck and brow guards but do not have cross-pieces.

The Late Principate

The 3rd century AD was a troubled period for Rome, with instability brought about by both external threats and internal conflict, as powerful individuals struggled for control of the empire, while sections of it sought to secede from the overall project. Attacks on the frontiers along the Rhine and Danube rivers saw the deposition of equipment there through abandonment and, probably, the taking (and denial by burial) of booty, manifested at least in part in northern ‘bog finds’, reflecting contemporary Germanic watery votive offerings. Again, battlefield sites like Harzhorn (Germany), which probably dates to around AD 235 (Pöppelmann *et al.* 2013), and Abritus (Bulgaria) in AD 251 (Radoslavova *et al.* 2011) contribute to the spectrum of finds from this hectic phase towards the end of the Principate. The dramatic nature of the deposition of the helmet from Niederbieber (Germany) itself, apparently accompanying a standard bearer slain in the headquarters building of the fort itself in AD 259/60 (Fischer 2019: 116), encapsulates the turmoil of the period perfectly.

The Niederbieber helmets and their related forms appear in the iconographic sources, particularly on some of the better 3rd-century AD tombstones, such as that of Ares from Alexandria (Egypt) and Iulius Aufidius of *legio XVI Flavia Firma* from Veria (Greece). Official art was by and large obsessed with classicizing images divorced from archaeological reality. This type of helmet also seems to be intended in depictions of legionaries on an engraved disc originally from Italy but now in the Bibliothèque National de France in Paris, possibly part of a circular sword-scabbard chape (Bishop 2019: 118). Fine representations of the Niederbieber helmet type were also produced as plate brooches, suggesting that the type may have been as iconic for some as the Montefortino helmet evidently was in the Republican period.

In the East at least, the iconographic evidence suggests that there was an alternative to helmets. The Battle of Ebenezer Fresco from Dura-Europos (Syria) depicts soldiers wearing coifs as an extension of their body armour and this detail is matched by a manuscript illustration ‘Nisus and Euryalus Before the Europos Synagogue Council’ in the *Vergilius Vaticanus* (Cod. Vat. Lat. 3225). Even in the few instances in which complete sets of mail or

scale body armour survive, it is impossible to confirm this from the archaeological evidence.



The eponymous helmet from the fort at Niederbieber (Germany) with a ferrous bowl and copper-alloy appliques. Its brow guard is missing and the cross-pieces are fragmentary.
(Photo © M.C. Bishop)



Tombstone of Ares, a 3rd-century AD legionary from Alexandria (Egypt) showing his shield, sword and helmet. (Photo © M.C. Bishop)

DESCRIPTION

The infantry helmets of the Early Principate had evolved beyond those of the Republic, reflecting the changing needs of the Roman Army and the threats posed by its opponents. The simple helmet bowls and neck guards of earlier helmets changed in the Early Principate with the advent of the Weisenau (both Imperial-Gallic and -Italic) type of helmets, executed in both iron and copper alloy. Additional protection was added by means of corrugation of the occipital region at the nape of the neck and stepped ellipses at the base of the neck guard. Ears were now permitted to protrude beyond the helmet bowl (in contrast to the restraint demanded by Montefortino or Coolus types) and, as a direct consequence, ear guards were introduced to protect them. It is unlikely that the prominent ears shown on some Early Principate tombstone depictions were a common trait of Roman soldiers (it can be argued that this fashion in fact mimicked Emperor Claudius' own protuberant ears, evident in his portraiture) and

there may well have been more practical reasons for this development (see **Detail from a cast of the helical frieze of Trajan's Column**).

The cross-pieces of High Principate helmets, which essentially continued the Weisenau traditions in most respects, were simply overlapped bars, usually sub-rectangular in section, riveted at either end to the surface of the bowl. In the Late Principate, however, these had evolved into prominent, rectangular-sectioned bars that slotted together at the apex of the bowl. Broader, more steeply angled neck guards presented considerable challenges to the smith, compared to the short protrusions of the Republican Montefortino types. Cheek pieces that enclosed the ears also overlapped at the front, forming a rudimentary open visor, in effect.



The copper-alloy Weisenau/Imperial-Gallic helmet from the Rhine River at Rijswijk (Netherlands) with a patch of solder at the apex of the bowl where a crest knob may have been attached. There is also a plume tube visible above the ear guard. (National Museum of Antiquities, Leiden/**CC0 1.0**)

VARIANTS

The Early Principate

Out of the Republican helmet types that continued into the Principate, Paddock felt his type XI Montefortino helmet (1st century BC/1st century AD) exhibits inferior workmanship to earlier types, with its large, undecorated, spun bulbous bowl with a deep, flat neck guard with plain moulding along its edge. The rim is slightly thickened but undecorated and there is a separate conical or truncated (undecorated) conical crest knob soldered to the bowl. No cheek pieces survive and hinges are usually attached with two rivets. His type XII (1st century AD) has a large, undecorated, bulbous hemispherical bowl with a broad, flat neck guard, an out-turned flange extended into the neck guard to the rear and an integral conical crest knob pierced for a pin to secure the crest. A single cheek piece survives with semi-circular cut-outs, and hinges are attached with just one rivet.

The Coolus type of helmet evidently overlapped the change from Republic to Principate, with a number of examples identifiable from Britain alone. As with the Montefortino helmet, those Coolus helmets that continued into the Early Principate acquired brow guards, broader neck guards and in some cases ear cut-outs. A pair of helmets from Schaan (Liechtenstein) typify this, one marked as the property of P. Covidius Felix and the other mentioning a *centurio* of *cohors III* (presumably legionary, as there is no ethnic title). Paddock again went further than Robinson, following Continental scholars in seeing a distinction between Coolus and Montefortino, with Hagenau/Hagenau helmets displaying characteristics of both. If nothing else, this serves to underline the subjectivity of helmet typologies and the risks of being too dogmatic in their application.

Finds from Augustan sites in the Rhine and Lippe valleys (Germany), as well as further south in Germania and in Pannonia (Croatia and Slovenia), reveal that Robinson's Imperial-Gallic forms of Weisenau helmets were already in use in the opening decades of the Principate. These were thus in use at the same time as Montefortino and Coolus types and the Imperial-Italic forms seem to have been introduced as the earlier types were phased out. There is no need to see any of these changes as being centrally driven

(as the result of a government diktat, for example), even if the means to achieve this existed, as it can easily be explained as being consumer demand: soldiers wanted the latest equipment when and where they could afford it.



Late Coolus/Hagenau helmet of copper alloy from the Waal at Nijmegen (Netherlands) with a broad neck guard and brow guard, bearing multiple ownership inscriptions: C(aius) Apius (in the century) of Catulus; L(ucius) Cornelius (in the century) of Catulus; (from the century) of Catulus; Q(uintus) Valerius (in the century) of Petronius. (National Museum of Antiquities, Leiden/[CC0 1.0](#))



Helmet fragments of the Weisenau/Imperial-Gallic type from Sheepen near Colchester (England) assembled into a 'Frankenhelmet'. (Carole Raddato/Flickr/[CC BY-SA 2.0](#))

Robinson identified a ferrous helmet from a burial at Nijmegen (Netherlands) as an important early example of his Imperial-Gallic type, although some of the examples of his Agen/Port type can just as easily be argued to demonstrate Roman characteristics (thereby reversing Robinson's suggestion that Gallic types influenced Roman design). A very similar tinned copper-alloy helmet, resembling the Nijmegen piece, but unfortunately unprovenanced, has subsequently come to light. The similarities between these helmets can usefully be compared with an example from the Augustan fortress of Haltern (Germany) on the Lippe, more or less contemporary with material from the Varusschlacht site at Kalkriese (Germany), which already shows many of the features (broad 'eyebrows', decorated brow band and rivet washers) that are familiar from other helmets of the type from later contexts. This nicely illustrates how what Robinson saw as seriated developmental traits could in fact be parallel evolutionary characteristics. It should be remembered that the Nijmegen and Haltern helmets both come from the same region, garrisoned by what would later be the *exercitus Germaniae Inferioris*. Another helmet from

Eich (Germany), further up the Rhine in what would become Germania Superior, is very similar to the Nijmegen helmet, however, while exhibiting influences from both Montefortino and Coolus helmets. Indeed, cross-fertilization of ideas saw brow guards, first found on Weisenau helmets, appearing on later variants of Montefortino and Coolus types, while a Coolus helmet (also from Eich) was modified to include ear cut-outs, again in imitation of Weisenau helmets (Oldenstein 1990).

B

TYPES OF EARLY PRINCIPATE INFANTRY HELMET



Early Principate helmets were made of both iron and copper alloy (usually brass, with a pleasing golden effect) and were of more complex construction than Republican helmets (1). The various manifestations of the Weisenau form of helmet, typified

by an example from a burial in Nijmegen (2) were gradually beginning to be introduced by the early Augustan period. Both Coolus (3) and Montefortino types continued into the early years of the Principate, however. Defensive innovations like the brow guard, cheek pieces shaped to fit the face better, and larger neck guards spread from the Weisenau helmets to the last versions of the Coolus and Montefortino helmets. The protective qualities of Weisenau helmets were enhanced with corrugation around the occipital region in the back of the neck and on the neck guard. In the case of the Imperial-Gallic helmets, the 'eyebrows' also provided additional reinforcement to the top of the forehead region, again through corrugation. One of the original Weisenau helmets (Robinson's Imperial-Gallic type D, from Mainz-Weisenau itself) is here reconstructed (4) with what may have been its original cheek pieces, with the silvered decorative washers matching those on the helmet bowl itself. Robinson's Imperial-Italic type D from nearby is the final reconstruction here (5). He thought the various types had regional significance (implied in his Imperial-Gallic and -Italic nomenclature), but these could just have easily been down to unit or army-group manufacturing traits.



A copper-alloy Coolus helmet with cheek piece from Schaan (Liechtenstein). (Andreas Praefcke/Wikimedia/Public Domain)

The speed with which variants of the Imperial-Gallic tradition of Weisenau helmets spread is perhaps exemplified by the fragments of helmets found at Colchester Sheepen (England). Components of Weisenau/Imperial-Gallic helmets were found in a pit at the Sheepen site, occupation of which continued after the abandonment of the nearby legionary fortress at Colchester and would thus belong in the Claudio-Neronian period (Niblett 1985: 24–25). Nevertheless, the fragments – now rightly or wrongly assembled into a ‘Frankenhelmet’ – were identified by Robinson as quite late in his Imperial-Gallic sequence, with some at least possessing a steeply angled neck guard.

The Imperial-Italic tradition identified by Robinson was viewed by him as parallel to the Imperial-Gallic and a sign of manufacture based in the Italian peninsula. Again, this is questionable, as is any correlation between the Italic/copper-alloy and Gallic/iron production tendencies; and, as time

passes, more examples are found to show the weakness of this equation. His early Imperial-Italic examples, notably helmets from Cremona (Italy) and Kiel (Germany), have the same corrugations of the neck guard and occipital region of the bowl as helmets of the Gallic tradition.



Weisenau/Imperial-Italic helmet from Cremona (Italy), possibly lost during one of the two battles at Bedriacum in AD 69, and showing clear evidence of battle damage on the bowl and neck guard. (Photo © M.C. Bishop)

The defensive characteristics of this period – enlarged neck guards, an emphasis on deflecting surfaces and corrugation for reinforcement – are matched by the elaboration of decorative elements that was totally alien to the Montefortino and Coolus traditions, as well as to the Agen/Port and very early Weisenau variants of both traditions.

The High Principate

The two developmental strands of Weisenau helmets continued through the second half of the 1st century AD. In the aftermath of Trajan's Dacian Wars, however, helmet bowl reinforcements or cross-pieces developed first as a

field modification, as with the Berzobis (Romania) helmet, and ultimately a permanent fixture. The Hebron (Palestine) helmet, thought to date to the time of the Bar Kokhba revolt (AD 132–36), is fitted with similar rudimentary cross-piece reinforces, even though it was not presumably being used against the Dacian *falx* (although it is always possible that the helmet had been used – and perhaps even manufactured – in Dacia before its loss in the East).

A helmet found in the *vicus* outside the auxiliary fort at Theilenhofen (Germany), together with a pseudo-Attic cavalry helmet, probably belonged to a mixed cohort based there (*cohors III Bracaraugustanorum*) and, as such, demonstrates how equipment varied between the two types of troops found in such a unit. It has the familiar stepped reinforcing corrugations in the occipital region and raised ellipsoids on the neck guard. There is a broad, plain brow band but, as restored, there is no brow guard. Reinforcing cross-pieces are present, although of the rudimentary kind found on the Berzobis and Hebron helmets, which point to its 2nd-century AD date.



Ferrous Weisenau-type helmet from Theilenhofen (Germany). It has a copper-alloy brow band and ferrous reinforcing strips but no surviving brow guard. The bowl and neck guard incorporate corrugations for reinforcement. (Wolfgang Sauber/Wikimedia/**CC BY-SA 3.0**)

A plain helmet in the Museo Archeologico in Florence (Italy), cut down for re-use under the Dominate (see **Lindenschmit's tinted photograph of the original Weisenau/Imperial-Gallic helmet**), retains a brow guard and cross-pieces similarly indicative of a 2nd-century AD date. The remains of a corrugation at the rear of the bowl, together with the form of the brow guard, confirm that this helmet predates the Niederbieber forms of the Later Principate.

C TYPES OF HIGH PRINCIPATE INFANTRY HELMET



In the High Principate, the Weisenau helmet types were dominant. At the beginning of the 2nd century AD, and coinciding with Trajan's Dacian Wars in what is now Romania, infantry

helmets began to be reinforced with cross-pieces from side to side and front to back. These only slightly added to the complexity of a helmet (1) and the addition was clearly thought to be worthwhile. From the crudity of execution of these additions, the Weisenau/Imperial-Gallic example from the legionary fortress at Berzobis (2) suggests that this was a field modification, with ferrous bars riveted to the helmet bowl. The same seems to be true of the slightly later Weisenau/Imperial-Italic type G helmet that was allegedly found in a cave in Hebron (3). It has been suggested that this modification was originally designed to counter the ability of the Dacian concave-edged *falx* to cut clean through a helmet bowl – and experiments have shown that this precaution was indeed justified. The fact that this modification was retained beyond encounters with this specific weapon suggests it found favour in wider contexts. Cross-piece reinforcements are still found on the Theilenhofen infantry helmet (4) but it is only vestigial on the Niedermörmter helmet (5) and, effectively, incorporated into the decorative scheme of that helmet. The Theilenhofen helmet continues the Weisenau/Imperial-Italic, whereas that from the Niedermörmter variant has exaggerated many of the features, such as the neck and brow guards.



A Weisenau/Imperial-Gallic helmet from a Trajanic context in the legionary fortress at Berzobis (Romania) with crude cross-pieces added to it. (Dorieo/Wikimedia/[CC BY-SA 4.0](#))



A Weisenau/Imperial-Italic helmet reputedly found in a cave in Hebron (Palestine). Like the Berzobis helmet, it has cross-pieces over the helmet bowl. The neck guard has been heavily restored. (Gary Todd/Wikimedia/[CC0 1.0](#))



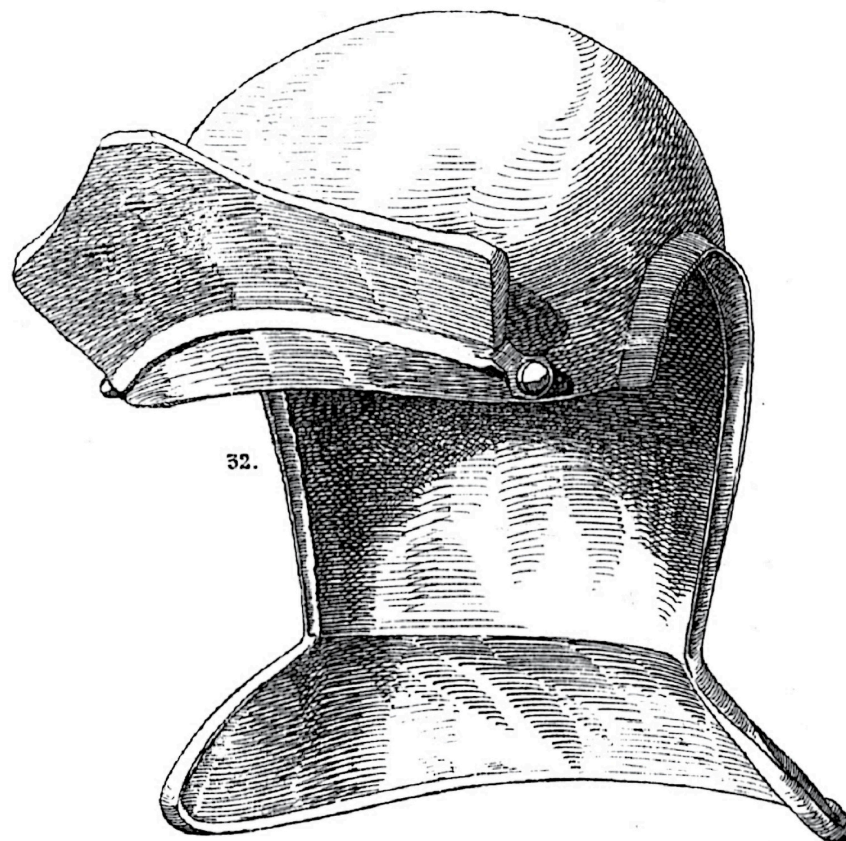
The copper-alloy Niedermörmter helmet. No cheek pieces were recovered with this item.
(Photo © M.C. Bishop)

Arguably the last of the Weisenau helmet forms is typified by a copper-alloy example from Niedermörmter (Germany), not far from Xanten, by the so-called ‘Mouse’ ferrous helmet from the Guttmann collection (Junkelmann 2000: 143–53), and possibly by a ferrous example from Hessen (Germany) and copper-alloy fittings (neck-guard binding and ansate handle panel) from Farndau (Germany). Not only do these helmets have very broad neck guards, but their brow guards were also very broad, although uniformly rounded and, in the case of the ‘Mouse’ helmet, perforated with *opus interrrasile*.

The Late Principate

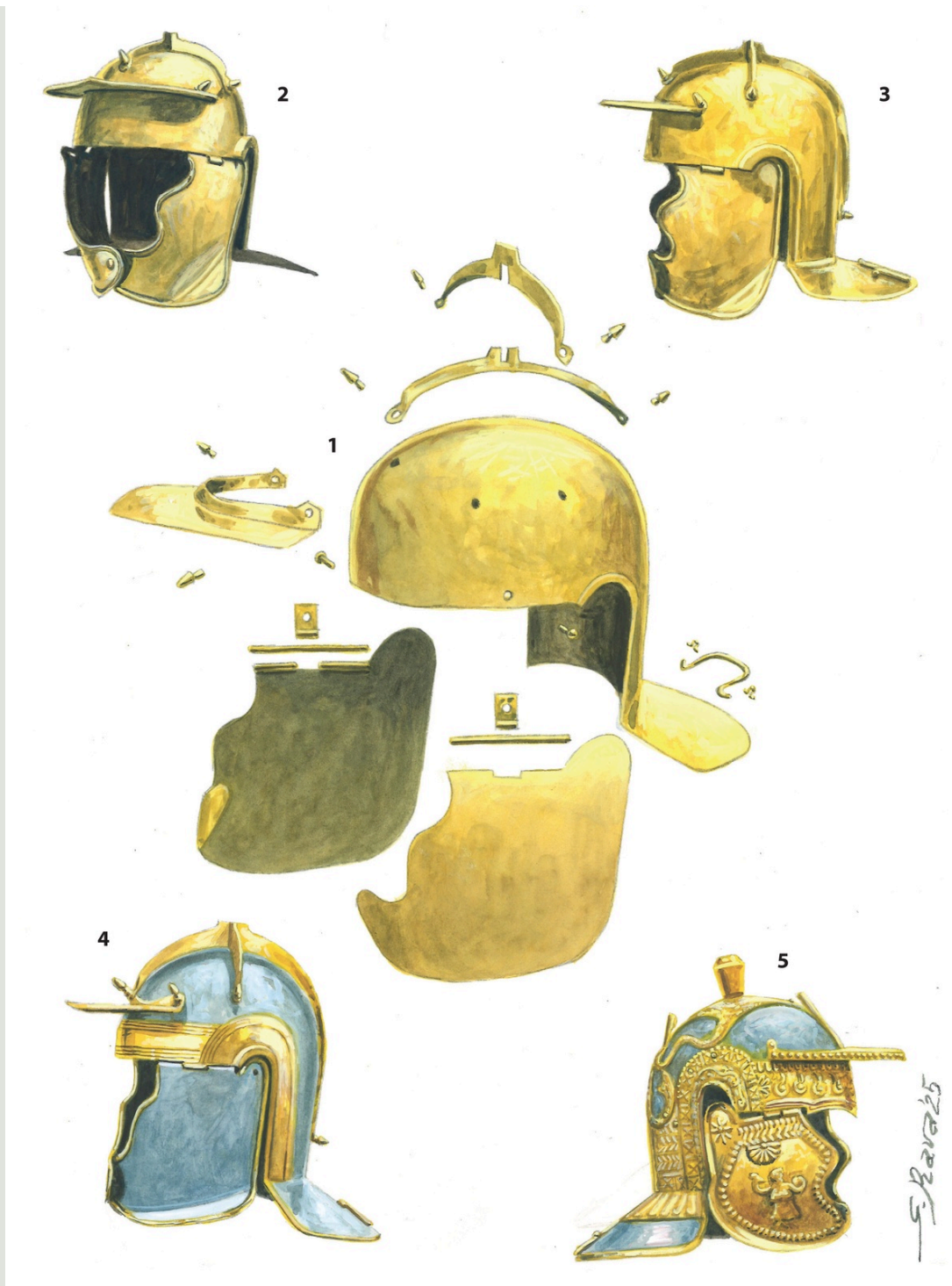
A new tradition of infantry helmet design began in the 2nd century AD. Robinson (1975: 89–106) included these within his Auxiliary Cavalry type but Fischer (2019: 101) has shown convincingly that this was an error. The origin of this interpretation is an incised inscription inside the neck guard of a helmet from Bodegraven (Netherlands), where a ‘T’ has been interpreted as *t[urmae]*, thus implying it was of a cavalry type (Burandt 2015). The Niederbieber family of helmets differed from previous forms in a number of

important ways. The corrugations of the Weisenau forms – on the neck guard, at the base of the neck and on the brow (as ‘eyebrows’) – were gone, as were decorative brow bands and, for the most part, edge binding. The brow guard was now larger than on earlier helmets and often came to a point at the front. These helmets also incorporated cheek pieces that covered the ear, much as earlier cavalry helmets had done, although they did not as a rule include a stylized moulding of a human ear and were sometimes perforated to aid hearing. There was also an evident fondness for decorative rivet heads, usually biconical or domed in form, to attach the brow guard and cross-pieces.



The ferrous Niederbieber-type helmet from Osterburken (Germany) in the 1895 publication report, with its inverted, pointed brow guard, possibly a measure to improve visibility for the wearer. (Drawing K. Schumacher/Public Domain)

D TYPES OF LATE PRINCIPATE INFANTRY HELMET



The infantry helmets of the Late Principate continued traits that had been evident earlier, particularly with deepening necks and neck guards, and cheek pieces getting ever larger until, like earlier cavalry helmets, they covered the ears. Brow guards had

extended into peaks and cross-pieces were now permanent in most cases. Although Robinson thought that the Niederbieber helmets and related pieces were used by cavalry, Fischer's refutation of this clarifies the links between earlier infantry helmets and these pieces.

Although the Niederbieber variants were to some extent simplified from earlier Weisenau helmets (1), they nevertheless required considerable skill to form them, particularly in the formation of the neck guard and its junction with the deep bowl. The original Niederbieber helmet was ferrous with copper-alloy attachments but a number of other examples (like the so-called von Grawert helmet, originally in the Guttmann collection) were executed in just copper alloy (2 and 3), almost invariably brass, which continued to be favoured for helmet construction over bronze. Two quite different helmets from Frankfurt-Heddernheim show the combination of ferrous bowl and copper-alloy attachments, with one of the helmets (4) a more complete example of the original Niederbieber type, and the other (5) reducing the cross-pieces to stylized decoration, morphing into snake motifs to the rear and sides and with elaborate embossed motifs around the brow band and base of the occipital region of the bowl.

The Mainz-Weisenau helmet (Imperial-Gallic type D)

Found in the Rhine River near the pre-Flavian legionary base in the Mainz suburb of Weisenau (Germany), near the Portland cement works, encrusted in gravel and with its cheek pieces still attached and folded inwards, this is the *original* Weisenau helmet. It measured 410mm from the centre front of the brow guard to the rear of the neck guard and the bowl was 140mm high. Each cheek piece was 136mm wide and 156mm high (see **Principate Infantry Helmets in Use**).

Classified by Robinson as Imperial-Gallic type D and Fischer as Weisenau type, it was also one of the finest examples of an infantry helmet of the Principate in terms of its proportions and

finish (Robinson 1975: 53). With the ferrous bowl and broad, flat neck guard formed in one, as was typical of Weisenau helmets, it bore embossed 'eyebrows' (or 'Flügeln/wings', as Lindenschmit's report called them) on the front of the bowl, above the brow guard, corrugations around the base of the bowl at the rear and two raised hemispheres on the neck guard where it met the bowl. The cheek pieces, cusped at the front to protect the cheek bones and chin, bore a marked flange projecting outwards.

A copper-alloy socket for a crest holder was riveted to the apex of the bowl. Exposed edges of the helmet (around the neck guard and cheek pieces) were finished with U-sectioned copper-alloy piping and a relief-decorated brow band (with five ridges, the outer two beaded, and with a central wavy line) crossed the front of the bowl. The ferrous brow guard was also finished with a repeating, copper-alloy inlaid herringbone motif, in a rather unusual touch. The fact that the decorative washers on the helmet bowl (which were stamped with a rosette pattern and silvered, with red enamel on the rivet heads) differed from the plainer brass examples on the cheek pieces hints at the fact that the latter were not original to that particular bowl and suggest that the cheek piece was a replacement. One of the three washers on the neck guard was a substitution too. The front and rear loops to help secure the crest box, as well as the loops inside the cheek pieces and under the neck guard for the laces to tie the helmet in place, were all missing.

Sadly, the helmet was seriously damaged during World War II and now only one of the cheek pieces and some fragments of the bowl survive.

The type find, the Niederbieber helmet itself, had a ferrous bowl with copper-alloy appliqués and was found in the headquarters building of the auxiliary fort of Niederbieber. It was associated with the abandonment of the site during the early 3rd century AD, probably at the time of the Alemannic incursion into Roman Germany in AD 233 and was found with the remains of a standard bearer. This event seems to have lain behind the deposition of a number of examples of the Niederbieber form of helmet.

Similar helmets with ferrous bowls and copper-alloy appliqué come from Heddernheim (Germany) and Nijmegen. Helmets from Friedberg and Kalkar-Hönnepel (Germany), Amerongen and Bodegraven (Netherlands), Sivac (Serbia) and an unprovenanced example formerly in the Guttman collection, were exclusively made of copper alloy, as was one found in a well in the *vicus* at Rainau-Buch (Germany). This last piece has been suggested by Fischer (2019: 118–19) as having belonged to a statue, rather than being a practical defence, largely due to the thinness of the metal used, but the presence of two functional (and disparate) cheek pieces must give pause for thought on that interpretation. The Friedberg example is interesting in that its brow guard had at some point (in antiquity) been replaced upside down, so that it pointed upwards at an angle, something also found on the ferrous Osterburken (Germany) helmet. As such, the brow guard, which normally sat horizontally, was rendered nearly useless in its role of protecting the nose from downward blows, although it is possible that this was a deliberate move to enhance visibility and situational awareness. This type of helmet is portrayed by two extremely accurate, but sadly unprovenanced, plate brooches now in private collections (see **brooches depicting crested Niederbieber helmets**).



A copper-alloy Niederbieber-type helmet (Hedderheim variant) from the Rhine River at Bodegraven (Netherlands) illustrating the use of biconical rivets, a pointed peak and *punctum* decoration (with both floral and faunal motifs). (National Museum of Antiquities, Leiden/**CC0 1.0**)

A variant on this form, generally known as the Hedderheim type, illustrated by two pieces from Nijmegen, no longer used cross-piece reinforcements, which had become so familiar on Niederbieber helmets, and instead incorporated a prominent crest knob. Re-examination of a helmet found in the Thorsberg (Germany) watery deposit has suggested that it too may belong in this category (Matešić 2013). Whether this variant was chronologically separated from those with cross-piece reinforces, or whether it was a stylistic variation is unclear.

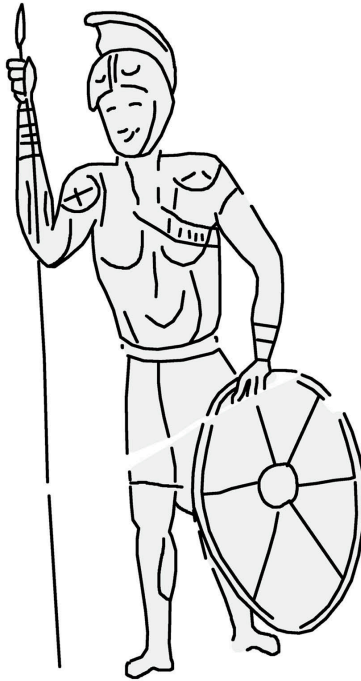
Robinson defined a separate category of ‘Auxiliary Infantry’ helmets, based partly on the quality of manufacture. In some cases, it is difficult to see what separates these from his Imperial-Italic category, but those that are conical quite clearly do not fall within the other categories. Perhaps understandably, these have sometimes been identified with the conical helmets shown on some ‘Eastern’ archers on the helical frieze of Trajan’s Column, although close examination of these depictions on casts reveals more similarities with the composite Dacian (or steppe) helmets depicted among the *spolia* on the pedestal reliefs and as trophies on the helical frieze of the Column.

DOMINATE INFANTRY HELMETS

Vegetius made a curious statement about Late Roman troops' abandonment of body armour and helmets:

Despite the military improvements inspired by the examples of the Goths, Alans, and Huns among cavalry, infantry has been left unprotected. From the founding of the city of Rome until the reign of the divine Gratianus, the infantry was equipped with body armour and helmets [*galeae*]. But as training was abandoned due to negligence and laziness, the armour began to seem burdensome to soldiers, who rarely wore it. Consequently, they first requested the emperor to eliminate the body armour and then the helmets [*cassides*]. (Vegetius, *DRM* 1.20, tr. author)

Vegetius' assertions do not appear to be matched by the facts, however, as both the iconography and archaeological finds demonstrate very clearly. His comments are perhaps explicable in the context of Theodosius I having to employ barbarian *foederatae* to supplement Roman Army numbers (Coulston 1990: 151).



Detail of an inscription dated to AD 352 on a marble tablet from Aquileia bearing a depiction of a 4th-century AD infantryman of the Moesiaci wearing a ridge helmet. (Drawing © M.C. Bishop)

The infantry helmets of the Dominate saw another radical change from what had gone before. The complex forms of the Principate gave way to simpler, composite forms that were much easier to manufacture. So far as it is possible to tell, this coincided with a change in the way that military equipment was produced through a system of state *fabricae* (see **Manufacture**). Once again, contact with external helmet types seems to have been influential, with a Sassanid Persian helmet found in the mid-3rd-century AD siege mine at Dura-Europos presaging the changes that would be found in Dominate helmets (James 1986).

The major obstacle to the sort of understanding possible with earlier helmets is the comparative dearth of archaeological finds. Complete helmets do occur, but finds of components are much more common, so an outline of Dominate helmet development has to be sketched from what is available. The suspicion that key evolutionary markers, such as the introduction of ridge helmets, may pre-date the Dominate in some regions (notably the East) cannot be backed up by solid data but it must always be considered as a possibility.

HISTORY

The excavation of the siege mine beneath Tower 19 on the western wall of Dura-Europos produced dramatic evidence of a subterranean battle between the Roman defenders and the Sassanid Persian attackers in the middle of the 3rd century AD. As well as the remains of a mail-clad Persian soldier, a Sassanid infantry helmet with its bowl formed in two halves and joined by a raised strip of riveted metal was recovered. Instead of a neck guard, it was equipped with an aventail or camail attached to the rim of the rear and sides of the bowl, formed from interlinked ferrous rings *c.* 9mm in diameter. James (1986) noted that such helmets were the most likely source for the ridge helmets of the Dominate; once again, enemy equipment determined Roman design. The Sassanid helmets were undoubtedly originally influenced by the helmets of steppe peoples, examples of which can be found depicted among the *spolia* on the pedestal reliefs of Trajan's Column. What remains unclear is precisely when these new types of helmets began to be produced by Roman craftsmen. The fact that they would have been easier to manufacture on a large scale may, however, imply that they appeared at the same time as the development of the system of state *fabricae*, with their more centralized system of arms manufacture.

The archetypal infantry ridge helmets were found in excavations at the auxiliary fort of Dunaújváros-Intercisa (formerly known as Dunapentele, Hungary), but a hoard of similar late helmets, both infantry and cavalry, dating to the middle of the 4th century AD, was discovered at Koblenz-Confluentes (Germany) and these provided additional details (and some differences) for comparison with the Intercisa helmets and single finds from a range of other sites.

Ridge-type helmets are depicted iconographically in a number of places and these seem to confirm the role of this type of helmet as infantry headgear. A relief from Gamzigrad-Romuliana (Serbia), the palace of the tetrarch Galerius Maximianus, junior partner (Caesar) to Diocletian (as Augustus) in the West, shows a cavalryman wearing a Pannonian cap next to an infantryman holding a spear and shield, and wearing a ridge helmet. A comparable depiction accompanies an inscription from Aquileia that can be attributed to a *protector* (named Ma[...]) of the *Moesiaci* datable to AD 352 (Speidel 1990: 69–71). A fresco from a tomb on the Via Maria in Rome likewise depicts a soldier wearing a golden-coloured ridge helmet, but this time one of those with a raised crest ridge. Another crested helmet, sadly

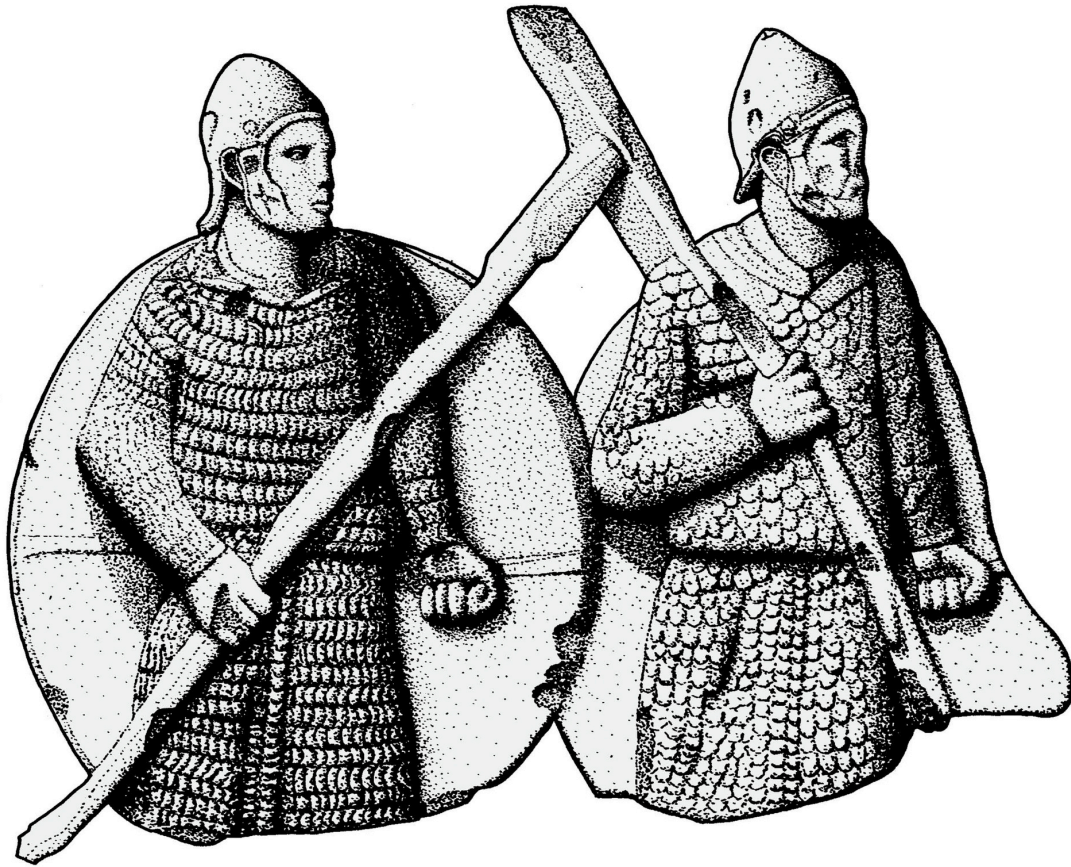
now devoid of detail, is depicted on a relief from Nicomedia (Turkey). Other late reliefs, such as that of Lepontius from Strasbourg (France) depict nondescript crested helmets that are uninformative in determining the helmet type depicted.



Relief from the palace at Gamzigrad (Serbia) depicting an infantryman wearing a ridge helmet of the Intercisa type. (Institute for the Study of the Ancient World/Wikimedia/**CC BY 2.0**)



Cast of the tombstone of the Late Roman soldier Lepontius from Strasbourg (France), the original having being lost. His helmet is highly stylized but appears to be intended as a crested ridge helmet. (Wolfgang Sauber/Wikimedia/**CC BY-SA 4.0**)



Relief now in the Vatican Museo Chiaramonti (Vatican City) showing two Late Roman soldiers wearing what appear to be *Spangenhelme*. (Drawing © M.C. Bishop)

There are reliefs that seem to depict the use of *Spangenhelme* by infantry during the Late Roman period, notably on the Arch of Galerius in Thessaloniki (Greece), dedicated in AD 303, and an unprovenanced relief of two soldiers, one wearing mail the other scale armour, now in the Vatican Museo Chiaramonti (Vatican City). An example of such a helmet from Deir el-Medina (Egypt) is undated, although a date in the 5th century AD has been suggested (Klumbach 1973: 14).

DESCRIPTION

The simplification of the ridge helmets (often called *Kammhelme* – literally ‘comb helmets’ – in German, in the sense of a cockerel’s comb) that made them easier to manufacture also made maintenance simpler. The two halves of the helmet bowl were joined by a central raised bar, riveting them together. The rim of the bowl once assembled was pierced by a series of

holes that were used to sew the leather liner to the bowl. Cheek pieces were attached to the bowl by means of leather straps, apparently buckled, rather than metal hinges as had been the case with Republican- and Principate-era helmets. The form of these cheek pieces supplied the principal structural difference between infantry and cavalry helmets, the latter being much larger, although nasals also seem to have been primarily a cavalry feature.

The cheek pieces of infantry helmets were positioned over the ear, rather than in front of it, and featured semi-circular cut-outs at the top in order to leave the ear to some extent exposed. As with Early and High Principate helmets, this was presumably to facilitate the transmission of vocal commands. These cut-outs were usually (but not always) accompanied by corresponding semi-circular cut-outs in the rim of the helmet bowl.

The Worms Intercisa-type helmet

The Dominate infantry helmet from Worms-Borbetomagus (Germany) was found in 1890 during construction work in Schildergasse. According to the *Notitia Dignitatum*, the site was garrisoned by the *milites secundae Flaviae*.

With a length of 240mm, width of 197mm and height of 145mm, the two-part bowl takes the form of a flattened oval. The two halves are joined longitudinally by a 33mm-wide, centrally ridged strip with pairs of domed silver rivets fastening it to form the bowl. The ridge is hollow, 9mm high and 15mm wide. The rim of the helmet is also finished by a separate hollow-ridged strip, 22mm wide, now running from the side round the back. This is finished with similar angled terminals on either side and it is not clear if it ever completely encircled the rim. Unlike the Intercisa or Augst helmets, there are no semi-circular ear cut-outs on either side of the bowl.

A separate neck guard, 105mm wide and 93mm high, was recovered that would have been suspended from the rear of the helmet. This had a short vertical section, with pairs of horizontal slits, one above the other on either side, which would have taken straps (possibly buckled) from the bowl itself. There were no corresponding slits in either half of the bowl so the straps must have been attached to, or been integral with, the (missing) helmet

lining. Below the vertical portion is the out-turned neck guard proper. X-rays show that the periphery of the neck guard has small holes c.12mm apart in order to attach a leather lining.

The two cheek pieces are 90mm wide and 126mm high (right), and 92mm wide and 129mm high (left). Both are gently curved to fit the side of the face and have semi-circular cut-outs at the top. As with the neck guard, the periphery of each cheek piece is pierced with holes, ranging between 13mm and 20mm apart. These will also have served to secure a leather lining, while a silver rivet is perhaps a trace of the way in which it was attached to the bowl. Given the absence of matching cut-outs on the bowl, this might suggest that the cheek pieces are not original to the bowl.

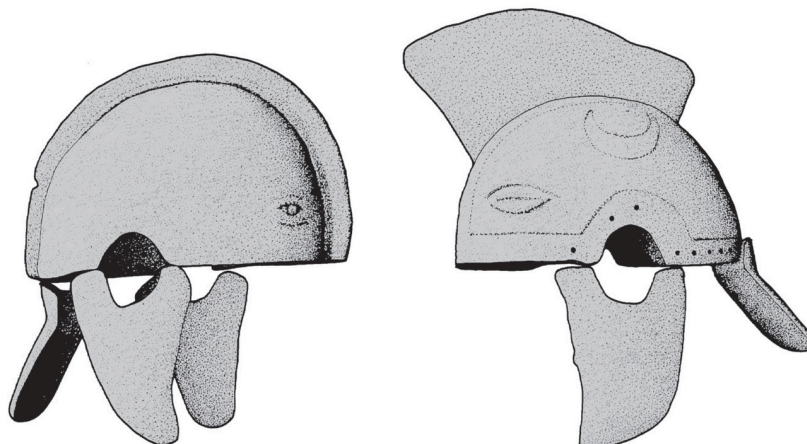
The helmet was covered by a gilded silver sheathing that has almost completely gone, but is preserved under the edges of the ridged strip, on the right-hand edge of the neck guard and on the top of the left-hand cheek piece.

At the same time, helmets now had a separate neck guard that was joined to the bowl in the same way. This provided an advantage over Principate-era helmets in that it was now possible to look upwards by tilting the head back without a fixed neck guard digging into the shoulders or upper back. All forms of ridge helmet seem to have employed separate decorative sheathing, something the Intercisa helmets have largely lost, with only their ferrous cores surviving. Separating a ferrous core from non-ferrous sheathing was nothing new in Roman helmet manufacture, as this was a practice found on cavalry helmets of the Early Principate. In the Dominate, however, it was universally used.

Another late form was a natural corollary to two-part ridge helmets: the *Spangenhelme* (literally ‘braced helmets’), which employed a framework to hold a series of plates that formed the bowl. The composite nature of such helmets, just like ridge helmets, made them easier to manufacture than earlier headgear (see **A decorated copper-alloy Niederbieber-type helmet**).

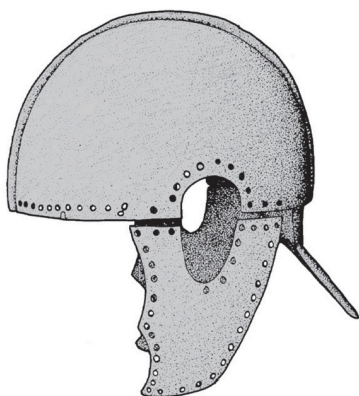
The Intercisa examples incorporated decoration into the ferrous core of the bowl, with raised and stylized eyes on the front and stars or crescents on the side. The Koblenz (Germany) helmets, on the other hand, did not include such embellishments. The preferred material was universally a

ferrous shell for the helmet bowl components with gilded silver sheeting attached to the exterior.

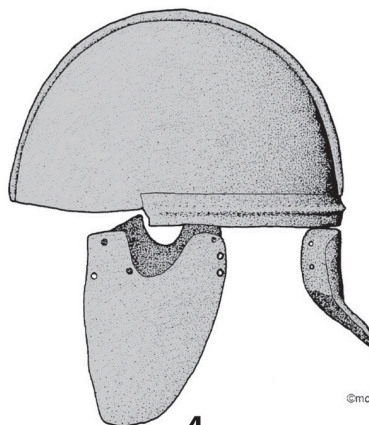


1

2



3



4

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Intercisa-type ridge helmets from Intercisa (Hungary) itself (**1** and **2**), Augst (**3**) and Worms (**4**). (Drawing © M.C. Bishop)

E TYPES OF DOMINATE INFANTRY HELMET



The ferrous infantry helmets found in the Roman fort at Intercisa (Hungary) are a big departure from earlier types due to their

radically simplified methods of construction. They consist of two halves of a bowl joined together with a simple raised riveted strip passing from front to back, which provides one of the names for this type of headgear as 'ridge' helmets (1).

Decoration was rather basic and executed directly onto the helmet bowl in each case, in the form of raised, stylized 'eyes', as with one of the examples from Intercisa (2) and Worms (4); crosses, perhaps intended to be stars (3), also from Intercisa; and crescents, probably representing the moon (5), all familiar imagery from the decoration of Roman military equipment of earlier periods. All infantry helmets in the Dominate seem to have had a skin of gilded silver added over the ferrous (or copper-alloy) core, however, although most are found with only traces remaining, having had it stripped off. The raised crest of one of the Intercisa helmets, reminiscent of front-to-back crests on helmets from the Principate, leads to one of the alternative names for these as 'comb' (i.e. crest) helmets.

VARIANTS

Klumbach (1973: 9) described the principal differences between infantry and cavalry helmets under the Dominate: cavalry helmets had cheek pieces that covered the whole of each side of the face and a frontal plate that incorporated a nasal; infantry helmets had smaller cheek pieces that left the ear protected but open, accommodated by means of cut-outs, those that had nasals having them riveted to the bowl, rather than a brow band. His definition depends largely on the association of the helmets with larger cheek pieces with archaeological evidence for a link to cavalry or, in the case of the Deurne (Netherlands) helmet, an inscription mentioning a mounted unit, but the iconographic evidence is at least supportive of the identification of Intercisa-type helmets as belonging to infantry.



One of two Intercisa-type ridge helmets from Augsburg-Pfersee (Germany), this one in the Germanisches Nationalmuseum in Nürnberg. The corroded ferrous core is covered by gilded silver sheets. (Wolfgang Sauber/Wikimedia/[CC BY-SA 3.0](#))

With comparatively few examples surviving, it is all too easy to see Intercisa helmets as the norm and others as a variant on this type; indeed, some commentators seem to have confused Fischer's numbering of finds with types (Klumbach 1973: 103–09). That, however, could be a distortion of reality with such a limited number of helmets available for consideration. The fact that ridge helmets do not figure so prominently among finds from dredging may be a contributory factor, but that could be down to their composite nature as much as changing habits in riverine or watery deposition of helmets. Besides the Intercisa examples, similar helmets are known from a number of sites, including Worms, Augsburg-Pfersee and Koblenz (all Germany), and Augst (Switzerland). The Koblenz components appear to have been set aside during the process of stripping the precious-metal sheathings from them. At least two cheek pieces of the Intercisa type were recovered from the excavations there (Miks 2014: 128).

Given the similarities between cavalry and infantry helmets, it is usually difficult to distinguish between them when isolated components are recovered from the archaeological record. Lyne (1994: 99), however, identified some components from Richborough (England) as belonging to

an Intercisa-type crested helmet that had been modified from a helmet of the Principate.

The reason (or reasons) for the difference between those ridge helmets with upstanding fixed crests and those without is unclear. It could be that it reflects a differentiation in rank, but that is a supposition that is unsubstantiated.

One effect of the changed manufacturing techniques seems to have been an absence of the regional traditions that is one interpretation of the major forms of the Principate (such as the 'Gallic' and 'Italic' Weisenau forms, or the Niederbieber types).

MANUFACTURE AND DECORATION

WORKSHOPS

In the Republican period, production of helmets seems to have been on an artisan basis for the most part, with state contracts issued in times of major conflict. A few Montefortino helmets have stamped inscriptions that are probably makers' marks (Paddock 1993: 491–92). A helmet in the British Museum is stamped [F]RON on the neck guard but interpretation of the mark is difficult. There seems little reason to doubt that it was a manufacturer's mark rather than an ownership inscription. A monogram FR on another helmet may point to the same craftsman at work. Another helmet, now in the Staatliche Museen in Munich (Germany), is stamped '*Q[uinti] Cossi Q[uinti] fecit*' ('Quintus Cossius son of Quintus [made this]'). These tell us little, however, about the way in which such helmets were actually being made: were these individual craftsmen in small workshops or men working within larger organizations, perhaps to government contract? There is a hint in Livy in a list of munitions required to equip some ships during the Second Punic War (218–201 BC):

Although he had neither gained consent to hold a levy, nor had been especially insistent, Scipio obtained permission to take volunteers and to receive whatever should be given by the allies towards the construction of new ships – this because he had stated that the fleet would not be an expense to the state. First the Etruscan communities promised that they would aid the consul, each according to its own resources. The men of Caere promised grain for the crews and supplies of every kind, the men of Populonium iron, Tarquinii linen for sails, Volaterrae the interior fittings of ships, also grain. Arretium promised three thousand shields, an equal number of helmets; and that they

would furnish a total of fifty thousand *pila*, *gaesa* and long *hastae*, with an equal proportion of each type; also axes, shovels, sickles, baskets and hand-mills, as many as were needed for forty warships. (Livy, *History of Rome* 28.45.14–17, tr. Moore, amended author)



Detail from the helical frieze of Trajan's Column (Scene XCVIII) depicting helmets with cross-piece reinforcements slung on the shoulders of legionaries on the march. From a cast in the Museo della Civiltà Romana, EUR, Rome. (Photo © M.C. Bishop)

Arretium thus promised helmets for marines, alongside other weaponry, presumably to Roman specifications.

Under the Principate, the Roman Army seems to have undertaken much of the production of helmets in the *fabricae* contained within legionary bases, as Vegetius (*DRM* 2.11) noted. Direct archaeological evidence of such production is limited, however, while that of repair is plentiful. State production appears to have been supplemented by craftsmen in the civil sphere, and these may well have included veterans.

By the time of the Dominate, production of helmets had probably become more centralized. Although no specific helmet *fabricae* are mentioned in the *Notitia Dignitatum*, it is possible they were included in the general *fabricae armorum* (James 1988: 261).

MANUFACTURE

Vegetius records that every legion had a range of craftsmen available to it:

These craftsmen either produce new arms, vehicles, and all sorts of weaponry or repair those that have been damaged. They also have workshops specialising in shields, armour, and bows, where they manufacture arrows, missile weapons, helmets, and every type of armour. This was, in fact, their principal duty – to ensure that anything the army might need would never be lacking in the camp. (Vegetius, *DRM* 2.11, tr. author)

The *Digest* of Justinian (50.6.7, citing the earlier jurist Tarrutienus Paternus) includes among its list of *immunes* serving as specialists in the Roman Army helmet-makers (*bucularum structores*: literally ‘cheek-piece makers’). Roman helmets were not mass-produced but rather had to be individually fashioned by craftsmen. Some tasks, particularly the formation of large neck guards, required considerable skill (many modern-day replicas resort to welding or brazing neck guards to bowls). To some extent, division of labour would be possible to produce components, with simple tasks given to semi-skilled workers, so that items could ultimately be assembled (a different model to that of modern-day single-craftsman replicas). Three principal alloys were used to manufacture Roman infantry helmets. In the Republican period, bronze was almost exclusively employed, but in the Late Republican/Early Principate period brass began to be employed and soon became the main copper alloy used. At the same time, steel became an alternative to bronze or brass for producing helmets.

The four basic types of infantry helmet – ‘jockey cap’ (i.e. Montefortino and Coolus), Weisenau (Imperial-Gallic, -Italic and early Auxiliary Infantry in Robinson’s terms), Niederbieber and ridge – all had distinctive manufacturing and assembly characteristics and provided improvements in fabrication (as well as protection) over their predecessors.

Being made of copper alloys, and with fairly simple bowl shapes, Montefortino and Coolus helmets could be spun, saving a lot of time raising them with a hammer over a former. Spinning began to be used during the 1st century BC for Montefortino and Coolus helmet types and involved turning a helmet bowl on a lathe, a technique borrowed from metal vessel manufacture. Before that, helmets were exclusively manufactured by

raising with a hammer over a former, and even spun helmet bowls had to be hammered if they were to fit the head more closely than a simple hemisphere.



A decorated copper-alloy Niederbieber-type helmet cheek piece from Carnuntum with perforated ear covering. It is adorned with an engraved image of Mars holding a spear in his right hand and with a *tropaeum* over his left shoulder. (Carole Raddato/Flickr/**CC BY-SA 2.0**)



Copper-alloy stamp found at Oulton (England) used to produce decorative washers for *lorica segmentata* and/or Weisenau/Imperial-Gallic helmets. (Photo © M.C. Bishop)

In contrast, Weisenau types had much more complex bowl shapes, with corrugations for reinforcement in the nape of the neck and on the neck guard (as well as ‘eyebrows’ in some cases), while neck guards were much larger. With Niederbieber helmets, neck guards deepened even more but corrugations were no longer employed, while cheek pieces became larger and covered the ears (as they had done on cavalry helmets in the past). Helmets had become simplified, but those large neck guards still required time and skill to fashion. Ridge helmets solved many of the manufacturing difficulties of the more elaborate earlier types. Forming the bowl in two halves (joined by the central ridge strip) and having the neck guard articulated in a similar fashion to the cheek pieces (ingeniously without using hinges) made these late helmets much easier to manufacture.

The decorative washers used for both *lorica segmentata* and Imperial-Gallic variants of the Weisenau helmet type were made using stamped-brass sheet. Examples that have been stamped but not cut out are known from Rheingönheim (Germany) and an actual stamp made of copper alloy was found at Oulton (England).

The quality of Roman helmet manufacture and finishing was extremely variable. Even the finest helmets, like the Imperial-Gallic D, incorporated

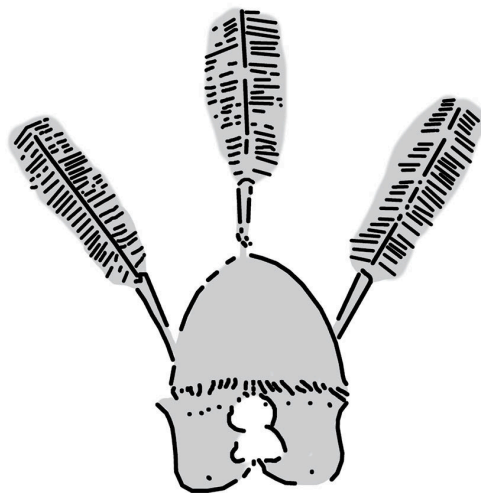
shortcuts. The finishing of edges, in particular, was skimped in favour of the use of U-sectioned brass binding that saved on time. Nevertheless, helmets with plainly visible hammer marks on the interior were usually planished to a smooth surface on the exterior, as was the case with the Ossario (Italy) helmet (Bennett 1989: 239–40).

The production of Dominate-era helmets was split between those producing the helmets (*fabricenses*) and those working on the decorative sheathing, known as *barbaricarii*, recorded as working in *fabricae* in Antioch and Constantinople (Klumbach 1973: 12). *Barbaricarii*, according to an edict of AD 374, were expected to produce 72 helmets a year.

DECORATION

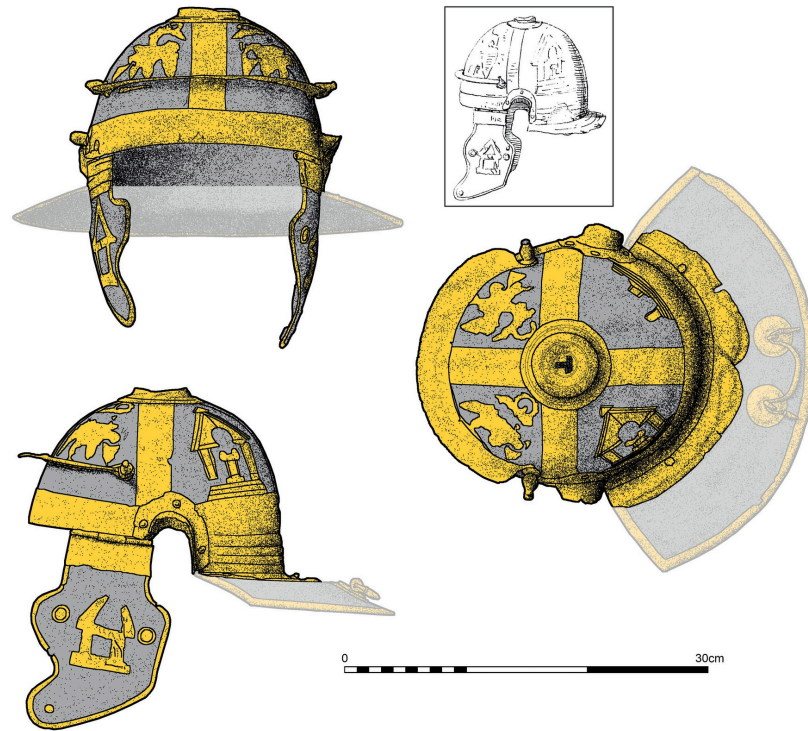
Ornament

Some form of decoration was almost invariably part of Roman helmet design. Very few examples that have survived bear absolutely no form of ornamentation. On Montefortino helmets it was subtle and understated, usually taking the form of a cable motif around the brim and edge of the neck guard, incised lines around the base of the bowl, as well as a moulded overlapping scale design around the crest knob. There was even less decoration on Coolus-type helmets, but the advent of the Weisenau type saw a new interest in decoration and this then spread to the later versions of both Montefortino and Coolus types.



Detail of an inscribed copper-alloy tablet from Entella (Sicily) bearing a decree depicting a Montefortino helmet with a three-feather crest. (Drawing © M.C. Bishop)

Tinning and silvering of a helmet bowl in the Principate made it look more valuable than it actually was (a shiny appearance was always considered important by the Romans: see **helical frieze of Trajan's Column depicting helmets**), but also provided some protection from corrosion. Tinning could be accomplished by dipping or wiping, while silvering involved a silver foil being soldered to the underlying metal. This was by no means common, but the use of contrasting metals, such as the employment of brass fittings on ferrous helmets, could provide a visually striking effect. Many of these fittings also had a practical function, such as edging or binding, washers, patterning on brow guards or carrying handles. The same is true of the corrugations in the occipital region, neck guard and the eyebrows on Imperial-Gallic helmets. The opportunity for decorative effect was not lost, however. Some helmets even employed enamel or coral as part of the decoration on rivet heads (as was the case with the Mainz-Weisenau Imperial-Gallic D helmet). Nevertheless, some details were purely decorative, like appliqués depicting temples, eagles or crescents on Imperial-Italic D or G helmets. The enigmatic 'Mouse' helmet, one of the Niedermörmter family of High Principate types, twice features a small brass mouse and accompanying *panis quadratus* loaf on the bowl, assumed to be in some way a punning reference to the owner. The Niedermörmter helmet itself, along with fragments of a similar helmet from Faurndau (Germany), incorporates motifs executed in *punctum*. Both feature familiar motifs, including standards, eagles, winged victories and Mars figures.



Weisenau-type helmet from Mainz-Weisenau itself (Robinson's Imperial-Italic D) with brass appliqué motifs. The area of the neck guard (greyed out) was reconstructed between 1885 and 1911 (see inset) and is not original (Schletter 2020: 181–82). (Drawing © M.C. Bishop)

Intercisa helmets had their decorative sheathing attached to their iron core by means of glue, traces of which were found on the helmet from Augsburg-Pfersee. The decorative sheathing was then folded over the edges of the plates before the leather lining was attached. It is always possible that what might appear to be uneven decoration on some reconstructed helmet fragments is due to them being assembled from components of more than one helmet. Some ridge helmets with central raised crests were adorned with the Chi-Rho monogram, marking their owners as Christian (presumably adopted after Constantine's victory at the Battle of the Milvian Bridge in AD 312). Fragments of helmets bearing these are known from a range of sites, including Kessel (Netherlands) and Richborough (England).



Column base relief from Mainz depicting two legionaries in action, both shown with dolphins where eyebrows/wings might be expected on Weisenau/Imperial-Gallic helmets. Brow guards and the edging of the helmet cheek pieces are also depicted, as are cut-outs for the ears and ear guards as part of the neck guard. (Photo © M.C. Bishop)

Cresting

Polybios succinctly identified the two principal reasons Roman helmets bore crests:

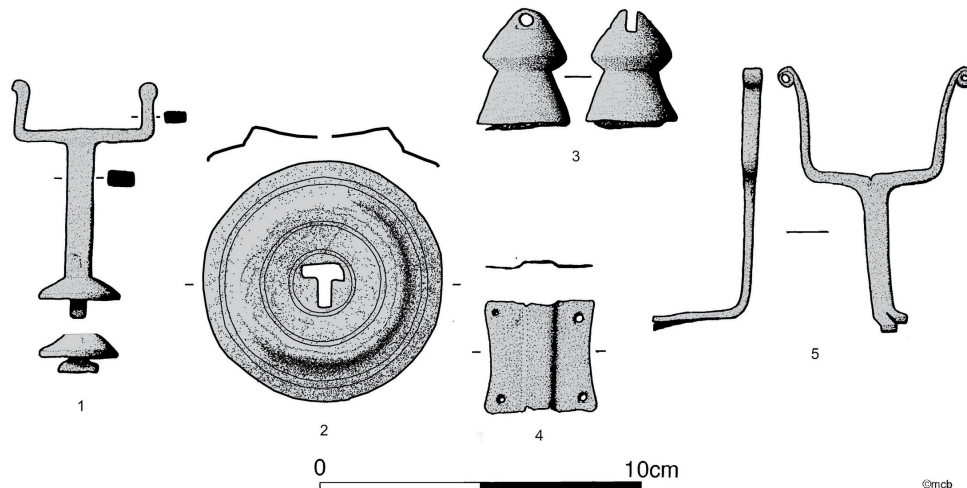
Finally they wear as an ornament a circle of feathers with three upright purple or black feathers about a cubit in height, the addition of which on the head surmounting their other arms is to make every man look twice his real height, and to give him a fine appearance, such as will strike terror into the enemy. (Polybios, *Histories* 6.23.13, tr. Paton)

Roman soldiers wore crests to enhance their own morale and to deplete that of their opponents. The triple-feather crest of Republican Montefortino helmets became so well known that it was even used to adorn the prows of Roman ships engaged in the battle of the Aegates during the First Punic War (see **Late Coolus/Hagenau helmet of copper alloy from Hagenau**). The same motif can also be found adorning Tablet B.1 from Entella (Sicily) and probably dating to immediately after the same war.



Fragments of a crested Intercisa-type ridge helmet (on a reconstructed bowl) from Kessel (Netherlands) with a christogram on the front of the crest. (Kleon3/Wikimedia/**CC BY-SA 4.0**)

There are examples of crests depicted with both hair (probably horse) and feathers (perhaps ostrich). The former seem more common in the Republican period, as with the so-called Altar of Domitius Ahenobarbus, and the latter in the Principate, as with the Praetorians relief, which probably comes from the Arch of Claudius in Rome. The tombstone of Petronius Classicus indisputably depicts a centurion's crest made of feathers, but that of Calidius Severus is highly stylized and it is unclear whether it depicts feathers or horsehair. There were remains of feathers found in the Corbridge Hoard (Allason-Jones & Bishop 1988: 105), but it is unknown whether these belonged to crests or something else, such as upholstery. It has been suggested that an item made of hair moss (*Polytrichum commune*) found at Vindolanda (England) may also have served as a crest. Brooches depicting Niederbieber-type helmets incorporated flowing hair crests.



Helmet crest fittings, including an Imperial-Italic crest-box support (1), an Imperial-Italic crest-box support socket (2), a Coolus/Hagenau-type crest knob (3), an Imperial-Gallic crest-box support socket (4) and an Imperial-Gallic crest-box support (5). (Drawing © M.C. Bishop)

Crest knobs were integral to the top (*apex*) of most Montefortino helmets, but Coolus helmets had them soldered into place. These usually had a fore-and-aft slit with the side-to-side hole through the knob, suggesting a crest box with a vertical tab under it secured by a pin. On helmets of the Principate period, crest boxes were fixed to the helmet bowl by means of a central forked crest holder, with either a T-shaped prong inserted vertically into a socket or one or two tongues sliding horizontally into a socket attached to the apex of the bowl. Similar supports were already in use on Apulian-Corinthian helmets in the 5th and 4th centuries BC so were nothing new. Rings hinged to plates riveted to the helmet on the brow and the occiput served to secure the crest box at the front and back by means of ties. No crest boxes have survived, but the typical dimensions and shape can be reconstructed from the form, size (about 25mm wide and high) and placement of such fittings. Crest knobs reappeared with Heddernheim-type helmets, but now with a single hole in the centre of the apex. These may have been designed for a ring (held by a split pin) to attach horsehair streamers, as was the case around the rear of the Crosby Garrett (England) helmet and as was found atop the Niedermörmter 'Mouse' helmet.

F REPUBLICAN INFANTRY HELMETS IN USE



Three vignettes of Republican helmets in use. The first (1) shows a marine from the time of the battle of the Aegates attaching a three-feather crest to his helmet using a detachable device that is fixed to the crest knob. This is the type of crest described by Polybios and depicted on the front of ships' rams from the site of that battle and on the tablet from Entella mentioned in the text (see **Fragments of a crested Intercisa-type ridge helmet**). In combat, the marine would be equipped with similar weapons and armour to a *hastatus* in the Roman Army – a belted mail shirt with shoulder doubling over a tunic with a scarf around his neck and the handle of his *gladius Hispaniensis* sword on his right hip – as marines, although on a ship, effectively fought in a similar fashion to land troops.

The second vignette (2) depicts a craftsman raising a Montefortino helmet with a hammer from a sheet of annealed bronze over a former. Craftsmen like this seem mainly to have been civilians (or perhaps veterans no longer in service) who produced armour under contract to the Roman state. The normal requirements of an army of a fixed size would require a steady trickle of equipment, but raising new units, whether on land or sea, would need a large number of items at short notice and here city manufactories could be pressed into service, as Scipio did when outfitting 40 warships during the Second Punic War (see **helical frieze of Trajan's Column**).

The third reconstruction (3) shows a Caesarian legionary tying his helmet in place using a single lace threaded through the loops inside either cheek piece and one under the neck guard at the back. Unlike earlier Montefortino helmets, this example has loops on the inside, not studs on the exterior. The strap was arranged so that it passed under the jaw on either side of the neck, using the jawline and chin of the wearer to provide a secure means of attachment. Connecting internal rings in this fashion made it less likely to be cut during combat, which would have rendered the helmet unusable, even if only temporarily.

Centurions wore a transverse crest (*crista transversa*), as Vegetius noted and at least two tombstone depictions (those of Calidius Severus and Petronius Classicus) confirm: ‘Besides the centurions (who are nowadays called *centenarii*), very warlike and wearing armour, with a transverse helmet crest (*crista transversa*), so that they were more easily recognised, were ordered to control each century’ (Vegetius, *DRM* 2.13, tr. author). A Weisenau/Imperial-Gallic helmet from Sisak (Croatia) has been argued as further proof of this, as it has crest attachment rings on either side of the bowl, just above the ears, as well as its central attachment point for a crest holder. In addition, the helmet was silvered to further enhance its appearance (Radman-Livaja 2004: 71–75).



Two plate brooches depicting crested Niederbieber helmets showing what appear to be flowing horsehair crests. (Photos © Holger von Grawert)

As well as fore-and-aft or transverse crests, plumes might be worn on either side of the helmet bowl, normally slotted into plume tubes riveted in place. The legionary Castricius Victor from Budapest is depicted on his tombstone with both side plumes and a central crest. A Coolus helmet from Drusenheim (Germany) has both a crest knob and plume tubes on either side, while among Weisenau helmets, an Imperial-Gallic example from Besançon (France) has plume tubes and a socket for a crest holder on top. One legion, *V Alaudae*, may even have earned its nickname from the fact that its side plumes made its men look like a shore lark (Bishop 1990).

The fact that crests and plumes could be used to distinguish units from one another may explain the use of the Latin term *insignia* in the context of creasing. The vagueness of Roman military terminology has already been alluded to, but a famous passage in Caesar's account of his Gallic wars may be relevant here. At one point, the onset of combat with the Nervii (a Belgic tribe of northern Gaul) was so swift that 'there was no space to attach *insignia* or even to put on helmets and remove covers from shields' (Caesar, *Gallic War* 2.21). Elsewhere, Caesar 'covers the military insignia of his men, [and] conceals the standards' to aid with concealment (*Gallic War* 7.45). A loan document from Egypt (*P. Vindob.* L135) goes further and couples 'a silvered helmet (*cassis*) and silvered *insignia*' as part of the collateral, so it is certainly tempting to infer that one of the meanings of *insignia* was as a general term for crests and plumes. This may also be the context in which *insignia* are mentioned in Tacitus' account of the emptying of the *armamentarium* in Rome (see **Tombstone of a member of the Praetorian Guard**), in which case it implies that legionaries could be distinguished from Praetorians by their creasing. Whether this was by colour or the type of materials used is unclear.

At least one example of rather unusual creasing is recorded:

No little terror was inspired in the barbarians by the centurion Cornidius, a man of rather barbarous stupidity, which, however, was not without effect upon men of similar character; carrying on the top of his helmet a pan of coals which were fanned by the movement of his body, he scattered flame from his head, which had the appearance of being on fire. (Florus, *Epitome of Roman History* 2.26)

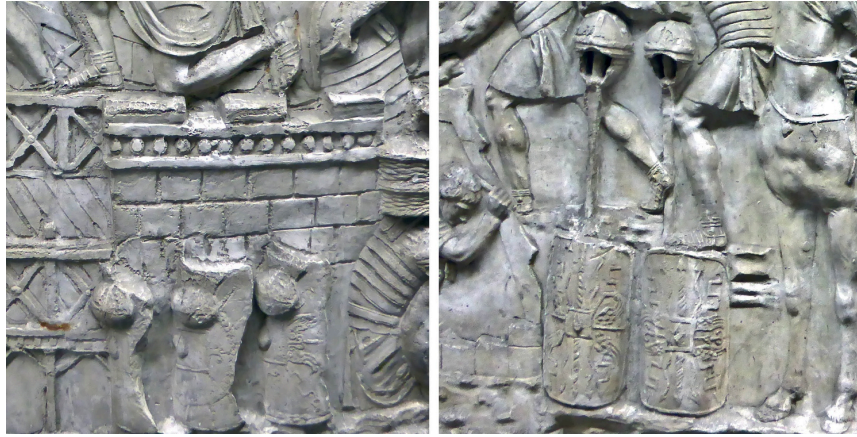
MAINTENANCE

Roman writers commented upon the psychological effect of shiny arms and armour. Although describing the duties of a cavalry officer, Vegetius conveys something of the importance attached to this aspect of equipment maintenance:

[He must] insist that they frequently clean and maintain their armour, including breastplates, spears, and helmets [*cassides*]. For indeed, the gleam of well-maintained armour brings great terror to the enemy. Who would believe a soldier to be warlike if his weapons are spoiled by neglect, dirt, and rust? (Vegetius, *DRM* 2.14, tr. author)

What is not known is how equipment was cleaned. Thorough drying after exposure to water would have been essential, particularly in bad weather, but inevitably some sort of abrasive would have to have been applied to remove any corrosion as soon as it was seen. Ferrous helmets with copper-alloy fittings would have been subject to electrolytic corrosion where the different metals were in contact. Whether helmets were given a mirror finish or merely cleaned so that they shone is also unknown. The technique of bluing – providing an oxidized layer to assist in resisting corrosion by quenching in oil (Sim & Kaminski 2012: 68–69) – has yet to be demonstrated conclusively on any ferrous helmets, although it was doubtless within the capabilities of Roman smiths.

Helmets were a prominent part of a soldier's defensive equipment and would have been subject to damage in combat, as well as accidentally. Attachments like edge binding strips, rivets, washers, tie rings and carrying handles are comparatively frequent finds in the archaeological record, while helmets that are recovered frequently lack – or have been stripped of – these components. Some fairly substantial repairs are sometimes apparent: the Mainz-Weisenau Imperial-Gallic D helmet was found with a cheek piece attached that did not bear the same pattern decorative washers as those on the rest of the helmet, strongly suggesting that it was a replacement.



Details from the helical frieze of Trajan's Column depicting helmets with cross-piece reinforcements (left) slung over the front of shields (Scene XI) and (right) on top of *pila* stacked with shields (Scene XXI) while legionaries are working upon constructing a fortification. From a cast in the Museo della Civiltà Romana, EUR, Rome. (Photo © M.C. Bishop)

INFANTRY HELMETS IN USE

Vegetius explained how Roman soldiers trained for battle: ‘The recruit practised against this stake with the wicker shield and singlestick as though with a sword and shield against an enemy; so, he might aim for the head or face, then he is threatened from the sides, then he strained to cut down at the hams and shins’ (Vegetius, *DRM* 1.11, tr. author).

Helmets in the ancient period served a very different purpose to those found in modern-day armies. Now, they are principally intended to protect the wearer from shrapnel, rather than prevent ballistic penetration by bullets. A Roman helmet had to protect a vulnerable part of its wearer during hand-to-hand combat, during which the opponent may have been making concerted efforts to strike at the face.

COMBAT

The evolution of Roman helmet design undoubtedly reflected experience of perceived vulnerabilities and sought to counter them. From the beginning, the Montefortino type covered the side of the face and ears with large cheek pieces featuring small, semi-circular cut-outs for the eyes and mouth. This could make it difficult to recognize individuals from the small amount of face visible. In 46 BC, when Labienus was confronted by an enemy legionary, the soldier said:

‘You’ll soon see what I’m made of.’ As he spoke the words he flung the helmet (*cassis*) from his head so that the other could recognise him and, thus uncovered, brandished his *pilum* with all his force, as he aimed it at Labienus: then plunging it violently full in the horse’s chest he said: ‘That will teach you, Labienus, that it’s a soldier of the Tenth [legion] who is attacking you.’ (Caesar, *African War* 16)

The small neck guard of the Montefortino type led Peter Connolly (1991) to suggest that this reflected a hunched or crouched fighting style, something

that changed as the neck guard got bigger and deeper in later periods.

The Coolus type reflected much the same design cues as the Montefortino, but the development of the Weisenau/Imperial-Gallic type, which Robinson thought was derived from the indigenous Gallic Agen/Port helmet forms, saw a far more complex and nuanced approach to the defence of the wearer's head (and, incidentally, upper body).

Weisenau/Imperial-Gallic cheek pieces alone were carefully crafted to deflect any blows that might make contact. A broad flange around the lower edge would direct a blade outwards towards the enhanced shoulder protection of whatever body armour was being worn. As cheek pieces provided more protection, the difficulties of facial recognition could lead to tragedy, as this well-known incident at one of the two battles at Bedriacum in AD 69 attests:

Julius Mansuetus of Spain, when enrolled with the legion known as Rapax, had left behind him a young son. Later, when this son had grown up, he had been conscripted into the Seventh legion by Galba. Now he happened to meet his father, whom he wounded and struck down; then, as he looked closely at the dying man, the father and son recognized each other; the son embraced his expiring father and prayed with tears in his voice that his father's spirit would forgive him and not abhor him as a patricide. (Tacitus, *Histories* 3.25, tr. Jackson)



Detail from a cast of the helical frieze of Trajan's Column (Scene XXVI) depicting a legionary fording a river with his helmet on his shield with the rest of his equipment. From a cast in the Museo della Civiltà Romana, EUR, Rome. (Photo © M.C. Bishop)



Metope at Adamclisi (Romania) with a legionary in action against two Dacians. He is shown wearing a Weisenau helmet with a deep neck guard, ear cut-outs and reinforcing cross-pieces on the bowl. (Photo © J.C.N. Coulston)

Ear guards on the side now protected ears that protruded from the helmet bowl (they were kept behind the cheek pieces on Montefortino and Coolus helmets) and also served to deflect blows from the side of the head. The fact that ears were still exposed, rather than covered, as was the case with cavalry helmets, may be indicative of the persistent importance of infantryman being able to hear vocal commands. Meanwhile, neck guards, which on earlier helmets had not been large, also grew broader and then more sharply angled downwards, all to counter blows aimed at the back of the head and upper shoulder area.

One puzzling aspect of the Weisenau/Imperial-Gallic helmet type was the stylized 'eyebrows' or 'wings' on the forehead. The earliest forms of this type of helmet, such as the example from a burial at Nijmegen, and its native antecedents, had a narrow raised ridge, turned down in the middle where the eyebrows met at the centre front, effectively creating an early version of the brow guard. By the time of the Nijmegen helmet, however,

the separate brow guard had been introduced and thereafter the eyebrows become merely decorative and generally less prominent.

Once brow guards had been introduced in the Early Principate, they tended to grow in depth in the High Principate, until under the Later Principate they evolved into pointed protrusions. There must be a suspicion that this reflected a perceived vulnerability of the wearer's nose to a downward blow and the ultimate development of nasal guards (first signalled on the Dura-Europos Sassanid Persian helmet) only serves to heighten this impression.

A major shortcoming of Early Principate helmets seems to have been revealed during the Dacian Wars at the beginning of the 2nd century AD. Encountering the Dacian *falx*, which had a concave curved blade, revealed the vulnerability of the helmet bowl to such a blade. Experiments have shown just how deadly the *falx* could be (Sim 2000). The solution has been identified on a Weisenau/Imperial-Gallic helmet found in the legionary fortress of Berzobis, whereby reinforcing cross-pieces were added using two bars, crossed at right angles over the apex of the helmet and riveted at either end. The crudeness of this device indicates that it was probably a field modification. It was found again on the Hebron helmet, thought to date to the Bar Kokhba revolt under Hadrian, and on the helmet from Theilenhofen.

Such bars continued in use long after the end of the Dacian Wars and were, in a more substantial form, standard on Niederbieber-type helmets. Interestingly, the Niedermörmter helmet used a stylized version of these cross-pieces, formed from broad bands with a central embossed ridge and bordered by beading, soldered to the surface of the bowl, all executed in copper alloy. Niederbieber helmets enlarged the cheek pieces even further, following earlier cavalry helmets by totally concealing the ear (albeit without the stylized moulded ear) and in some instances actually overlapping at the front of the chin. Additional protection was provided with a deepened neck guard, and this enforced an upright stance at all times. Indeed, it has been suggested that the reason no Roman soldiers were wearing helmets in the mine under Tower 19 at Dura-Europos may have been precisely because it was too cramped for them to stand upright (James 2004: 102–03).

Actual evidence of combat can be found in a few instances. One of the helmets from Cremona, close to the site of the two battles at Bedriacum,

shows evidence of damage that has been interpreted as having been inflicted during combat. It is likely that a proportion of the repairs detectable on helmets originate in damage caused during combat but in most cases – as with the substituted cheek piece on the Mainz-Weisenau helmet (see **The Mainz-Weisenau helmet**) – there is no way of knowing this for sure, as regular, everyday attrition could just as easily lead to such repairs.

The effects of receiving repeated blows to the head during both training and combat, a possible cause of chronic traumatic encephalopathy (CTE), even protected by a helmet with padded lining, may lie behind legislation of Hadrian mentioned in the *Digest* (29.1.34): ‘that the will of a soldier who

preferred to die rather than to suffer pain, or the annoyances of life, was valid' (Jo Ball, pers. comm.).

G PRINCIPATE INFANTRY HELMETS IN USE



The helical frieze on Trajan's Column depicts soldiers involved in construction work stacking some of their equipment (notably the pieces that would get in the way while working) nearby. The use of the curved, rectangular *scutum* made it possible to do

this in a stable way that was not possible with oval shields. Placing the *pilum* behind the shield and then looping the helmet tie lace over this produced a convenient means of stacking equipment that also made for easy access in the event of an emergency (1). Presumably the tie lace was run from the loops under the neck guard and down to the hand grip of the shield where it could be secured with a slip knot. Cheek pieces seem to have been folded inside the helmet bowl in every case. Presumably, in high winds, the shield would be lain down with the helmet on top to keep it in place.

During the Early Principate, as neck guards grew larger, helmet carrying handles began to be attached. These were of a fairly uniform size, but were never large enough to fit an entire adult hand through. By inserting the three middle fingers through the loop and using the little finger and thumb resting against the neck guard, however, it was possible to steady the helmet while carrying it (2).

Tying the helmet to the shield hand grip is also suggested by the relief of three legionaries from Croy Hill, in which two of the three men have their helmets draped over the front of their shields, which rest by the left foot in each case (3 and 4). The third man (5) wears his helmet on his chest, presumably having tied the lace around his neck. Again, in each case, the cheek pieces appear to have been folded within the helmet bowl. All three men wear *paenulae* over their mail armour, but only the centre man has a beard (fashionable in the Antonine period), which has sometimes led to suggestion that this man was the father of the two clean-shaven men on either side of him.



Copper-alloy Niederbieber-type helmet cross-piece reinforces and carrying handles from Corbridge (England). (Photo © M.C. Bishop)



Column base relief from Mainz depicting a legionary with a helmet slung over his *pilum*, which he carries over his right shoulder. Note the bilobate corrugation depicted on the neck guard. (Carole Raddato/Wikimedia/[CC BY-SA 2.0](#))

CARRIAGE

When not in action, helmets might not always be worn on the head. On the march, they could be slung over the shoulder, as shown on a relief from Croy Hill on the Antonine Wall depicting three legionaries (see **Stone relief from Croy Hill on the Antonine Wall**). A column pedestal relief from Mainz includes a legionary soldier on the march with his helmet worn on his right shoulder, apparently *over* his *pilum*, which he carries in his right hand. The Croy Hill sculpture also shows helmets slung over the front of the shield when stationary, something that is likewise illustrated on the helical frieze of Trajan's Column, when troops were engaged in construction work. All of these iconographic sources show that the helmet was suspended neck guard upwards, which, given the common occurrence of carrying handles there, makes a good deal of sense. They also appear not to have the cheek pieces splayed outwards, suggesting they were folded inwards, perhaps for protection. Some helmets, including one from Hebron, have in fact been excavated in this configuration (Weinberg 1979: 82). By contrast, the Etruscan Montefortino helmets depicted in the Tomb of the Reliefs at Caere are shown as hanging on the wall with their cheek pieces splayed out.

During the 1st century AD, carrying handles began to be added to the neck guards of helmets. These were never broad enough to get a whole hand through, but the three middle fingers could be used, with the thumb and little finger braced against the neck guard to stabilize the helmet when being carried. Handles were generally cast in copper alloy and attached to the neck guard by means of a pair of split pins.



Funerary *cippus* from Aquileia depicting an Agen/Port-type helmet complete with a knotted tie where the cheek pieces meet. (Wolfgang Sauber/Wikimedia/[CC BY-SA 3.0](#))

Ties

Early Montefortino (and some Coolus) helmets used a protruding fungiform stud on each cheek piece to fasten the helmet, pushed through a leather strap passing through a ring or rings under the neck guard. From the Late Republican period, right through into the High Principate, infantry helmets were secured by a single lace tied through three points, one under the centre of the neck guard and one inside and at the bottom of each cheek piece. This meant that the lace passed beneath the jaw and under the neck guard, rendering it safe from being accidentally severed by an attacker. The tie points usually consisted of a metal loop or ring passed through a doubled-over rectangular plate that was riveted to its attachment location. On some helmets, the rivets were secured on the outer surface of the helmet with decorative washers. These laces may also have served to secure helmets when they were not actually been worn on the head, whether it be on the

shoulder of a marching soldier or onto the front of a shield (probably by securing them to a hand grip) while working. The tombstone of the centurion Petronius Classicus from Ptuj actually depicts the helmet tie lace as a bow under the large cheek pieces. A bow tied under the chin is also shown on the funerary *cippus* from Aquileia.

Some Niederbieber-type helmets used a simplified fastening system that did away with a knotted lace and allowed for a more secure fit for the helmet. Here, the cheek pieces overlapped at the front and a loop on one cheek piece passed through a slot in the other and used a pin to secure them. Slots at the back of each cheek piece allowed for a strap to pass around the neck, just above the neck guard, completing that secure fit.



Tombstone found in Bonn (Germany) of the standard bearer Pintaius from *cohors V Asturum* showing his helmet covered with an animal pelt. The cusped cheek pieces and rim of the helmet bowl are clearly visible. (Photo © M.C. Bishop)

Lining

All helmets required some form of padded lining, either attached or separate, in order to absorb the shock of any blows and provide general comfort for the wearer. The archaeological evidence is extremely limited, but seems to indicate that in the Republican and Principate periods a fabric lining was integral to the bowl and cheek pieces, secured through the use of glue. Some of the additional rivets with decorative bosses on Imperial-Gallic helmets may have been used to provide extra security for such linings (there can be few other reasons for their existence), but poor survival generally means this is speculation.

Under the Dominate, despite the presence of holes for stitching linings to ridge helmets, it is generally believed that a separate liner was used that could be worn as a cap. Vegetius' interpretation of its purpose is slightly different, however: 'Up until now, the custom has persisted that all soldiers wore caps, which they called "Pannonian", fashioned from animal skins; this was done so that a heavy helmet would not seem burdensome in battle to a man who was always wearing something on his head' (Vegetius, *DRM* 1.20, tr. author). The *pilleus Pannonicus* is depicted in iconographic sources as a 'pillbox' hat (Džamtovski 2018), most famously on the heads of the two pairs of embracing tetrarchs now built into St Mark's Basilica in Venice (and known to have been looted from Constantinople).



Purple porphyry sculpture of two pairs of embracing tetrarchs, originally from Constantinople (modern-day Istanbul, Turkey) but now built into St Mark's Basilica in Venice (Italy). All four wear the *pilleus Pannonicus*. (Nino Barbieri/Wikimedia/**CC BY-SA 3.0**)

Helmets may also have been provided with some form of external covering or protection on occasion, similar to the leather covers provided for shields. Indeed, when Pompey wanted to conceal some infantry and avoid the reflections from their helmets catching the attention of the enemy, he ordered his men to cover their helmets (Frontinus, *Strategemata* 2.3.14). A helmet from the legionary fortress at Vindonissa in modern-day Windisch (Switzerland) was excavated with a leather cover over it (Deschler-Erb *et al.* 2004). It is unclear whether this was a bespoke cover or if the helmet had just been deposited within a leather bag (within which it may have been stored). Another interpretation may be suggested by a 'modified' helmet

found at the site of the battle of Gelduba, dating to the time of the Batavian Revolt. Discovered in a camp ditch, the Weisenau/Imperial-Gallic-type helmet bowl had had all attachments removed and the neck guard cut off, and retained traces of a pelt over the bowl, a leather band around the brim, into which feathers had been inserted (Fahr 2005: 122–23).



Lindenschmit's tinted photograph of the original Weisenau/Imperial-Gallic helmet found at Mainz-Weisenau (Germany). Note how the decorative bosses around the rivet heads on the cheek piece differ from those on the bowl. (Lindenschmit/ Public Domain)

H DOMINATE INFANTRY HELMETS IN USE



All armour, including helmets, when it is worn requires some form of padding. This is not only for the purpose of a comfortable fit but crucially it serves to absorb some of the blunt force inherent when a helmet is struck by a missile or a blow

from a blade. In earlier helmets, evidence suggests that the lining was integral to the helmet, but the introduction of the *pilleus Pannonicus* ('Pannonian cap' or 'bonnet') in the 3rd century AD changed this. Made from hide or fur (1 and 2), it is generally held that these were worn separately under the headgear (3) – although what Vegetius says on this is, at best, ambiguous – and even on occasion without a helmet as an item of clothing in their own right. Even emperors could be seen sporting it, as witnessed by the statue of the tetrarchs Diocletian and Maximian originally from Constantinople and now built into the exterior of St Mark's Basilica in Venice.

The final image (4) serves as a reminder that antique Principate helmets (such as the example from Florence in Italy) were on occasion modified into the form of Dominate helmets, although whether this was a measure of desperation or in some way thought to bring good luck is unclear. The significance of retaining the brow guard and cross-pieces is similarly unknown, as these were not found on true Dominate helmets.

OWNERSHIP

Helmets, like all other Roman military equipment, belonged to the individual soldier. Each man was obliged by military law to possess a helmet and not to discard it in time of battle, for if he did so he would be considered to be a deserter (see **Roman Infantry Helmets**). Importantly, there was no requirement for uniformity of the sort found in modern-day armies. Owning equipment had several significant implications for the soldier, as it – along with that legal requirement not to do so – would make him less likely to throw away his equipment, a characteristic of armies in flight.

Soldiers often, but by no means always, chose to mark their ownership of a helmet in some way. Identifying these can be complicated by the state of preservation of any given item and corrosion can easily mask any lettering, which may not necessarily survive conservation and cleaning. This usually took the form of an abbreviated inscription punched into the metal, usually somewhere on the neck guard, with a series of dots forming the letters (a technique called *punctum*). Occasionally, inscriptions would be scratched

into the surface – a true graffito – but the *punctum* method is the most commonly found. A man would be identified by a standard formula, consisting of the name of his centurion (whose rank would be denoted by the centurial mark > prefacing his name) and then his own name. Such inscriptions were clearly designed to make ownership clear within a unit and they only rarely included the name of the unit itself.

The Coolus-type helmet from London (see **helical frieze of Trajan's Column**) includes multiple ownership inscriptions on the neck guard, not only indicating that it had more than one owner but also suggesting that it was already old when it entered the archaeological record during the 1st century AD (probably between AD 43 and 60). The four identified inscriptions (*RIB* 2425.2) are enlightening: '> *M[arci] Val[erii] Urs[i] L[uci] Dulci*' ('[under] centurion Marcus Valerius Ursus [belonging to] Lucius Dulcius'); '> *Mart[ialis(?)] L[ucius] Postumus*' ('[under] centurion Martialis [belonging to] Lucius Postumus'); '> *Scr[iboni] Rufi*' ('[under] centurion Scribonius [belonging to] Rufus'); '> *Ma[rtialis(?)] Aul[i] Saufei*' ('[under] centurion Ma[rtialis(?)] [belonging to] Aulus Saufeius'). At least three different centurions (Ursus, Martialis and Scribonius) are mentioned, indicating that helmets could be passed between men in different centuries. A helmet from the Waal at Nijmegen names two different centurions and four owners, one of whom seems to have been one of those centurions. Four owners serving the standard 20 years of a legionary would indicate that a helmet was up to 80 years old at the time of loss, but indications of erased inscriptions might mean that the London helmet is even older than that. Indeed, a Coolus helmet from Hönnepele (Germany) had as many as eight inscriptions on it (Klumbach 1974: 28–29). It is possible, however, that a soldier might not retain the same helmet for the entire duration of his service and so it could be passed on when a newer piece was bought, for whatever reason, so such calculations are by no means certain.

The Niedermörmter helmet is thus unusual in this respect, as its inscription (*AE* 2012: 979) identified only one name: '*Leg[io] XXX Ulp[ia] Vic[trix] L[uci] Sollioni Superi*' ('Thirtieth Legion Ulpia Victrix [belonging to] Lucius Sollionius Super'). The inscription was also not placed in the usual location, but rather on the brow guard. This may in fact suggest that Super was himself a centurion, hence he only needed to include his name to be identified as such, although there is no surviving indication of a

transverse (or any other) crest attachment. Another helmet, found at Burlafingen (Germany) included the *punctum* inscription: ‘*Le[gionis] XVI > Arabi M[arci] Munati P[ubli] Aur[eli] Siri*’ (‘Sixteenth Legion [under] centurion Arabus [belonging to] Marcus Munatius [and then] Publius Aurelius Sirius’) (*AE* 1963: 41).



Detail of the Rijswijk helmet showing an ownership inscription, naming Titus Allienus Martialis of the century of Antonius Fronto, partly obscured by a retrofitted carrying handle secured by split pins, presumably once Statorius Tertius had taken ownership of it. (National Museum of Antiquities, Leiden/**CC0 1.0**)

A significant proportion of surviving Roman infantry helmets have come from watery deposits, particularly from the dredging of major rivers for navigation or gravel extraction purposes. This inevitably begs the question of how and why these helmets came to be deposited in water. Robinson (1975: 58) was one of those who believed it was due to accident or casual loss, but there is at least good reason to suspect a deliberate act in a proportion of cases. It has long been known that weaponry could be dedicated to deities (Bishop & Coulston 2006: 30–31) and the deposition of artefacts in water is a phenomenon found across a wide range of periods in the past, from the prehistoric to the medieval. The possibility that a beloved helmet could be offered in this way, perhaps in fulfilment of a vow in

combat, cannot be excluded, as this was an important aspect of the contract religion practised by members of the Roman Army in the pre-Christian period. Dedication of helmets was certainly not unknown in the Roman period, as is attested by the tombstone of Ares in the British Museum (Waebens 2012: 330). Replacing such a helmet with a newer model would avoid the legal stricture not to discard equipment; because soldiers who had bought their own arms and armour would be free to do this.

Soldiers effectively paid for equipment on hire purchase from the Roman Army, with small deductions (just noted as '*arma*' in surviving documents) made from every stipend they received in order to pay it back. They seem to have been quick to realize the monetary potential of these assets (and it must be remembered that military equipment that included copper alloy, silver or gold was effectively bullion) and, in the aforementioned loan document (see **brooches depicting crested Niederbieber helmets**), even used them as collateral on loans, as is recorded for one cavalryman who used his silvered helmet and *insignia* and silver dagger scabbard to borrow 400 *drachmae* from an infantryman in a cohort.



Detail of the top of a tombstone of a member of the Praetorian Guard from Aquileia depicting the military equipment including his curved, oval shield, *pilum*, sheathed dagger and sword and crested (Montefortino- or Coolus-type) helmet. (Photo © J.C.N. Coulston)

WHO WORE WHAT?

Robinson suggested that older legionary helmets were passed down to auxiliary troops. A Flavian relief on a column base from Mainz (see **Column base relief from Mainz depicting an auxiliary running**) showing a running auxiliary soldier, equipped with javelins and an oval shield, depicts what is almost certainly a Coolus-type helmet (the general accuracy of this series of reliefs is impressive when compared to actual finds recovered from the archaeological record). This of course does not prove Robinson's hypothesis, but it is perhaps noteworthy given that we know that type of helmet does not appear to have survived into the Flavian period in Britain.

Tacitus seems to confirm that there was differentiation between the helmets of citizen troops and auxiliaries: 'Then he ordered the *armamentarium* to be opened. The soldiers immediately seized arms without regard to military custom or rank, with no desire to distinguish praetorian or legionary by their proper *insignia*; they wore the helmets (*galeae*) and shields of auxiliaries without distinction' (Tacitus, *Hist.* 1.38, tr. Moore, amended author). He does not, however, confirm that older equipment belonged to auxiliaries, merely that it was in some way different to that of citizen soldiers. Unfortunately, few ownership inscriptions provide unit identities, the Niedermörmter and Burlafingen helmets being among the exceptions, and none have survived that can be interpreted as equipment passed from legionary to auxiliary (or vice versa).

LEGACY

For later ages, the iconography of Roman helmets was dominated by depictions on the helical frieze of Trajan's Column that did not provide accurate representations of helmets from the Principate. Even when archaeological examples began to be dredged from the major rivers of Europe in the early modern era, the Column stereotypes continued to be used. These stereotypes were readily adopted by reconstruction artists and, ultimately Hollywood. Once theatrical costumiers thought they knew what Roman infantry helmets looked like, it became exceptionally difficult to break the chain of supply and demand, with only a few exceptions. Only with the arrival of re-enactors in 'living history' events were alternatives presented, based on the archaeological evidence, allowing the public perception of what Roman infantry helmets looked like to progress towards a more accurate approximation of reality. The living history movement has in fact seen the development of an industry, largely based on the Indian subcontinent, intended to supply cheap replicas of almost all known Roman helmets. Other, lower-volume, craftsmen aim to produce higher quality replicas. Ironically, this probably reflects reality for much of the Republican and Principate eras.

The legacy of the helmets of the Dominate has fared much better, as their influence is readily apparent in the helmets of the northern Germanic and Norse peoples (the Angles, Saxons and Vikings). Ultimately, the appropriateness of the doyen of Roman helmet reconstruction, Henry Russell Robinson, working on the reconstruction of the Sutton Hoo (England) helmet (Negin 2019: 2), will be readily apparent to most.



An author's-eye view of a re-enactor's replica Weisenau-type helmet (Robinson's Imperial-Gallic A). This piece pre-dates mass-produced replicas from the Indian subcontinent. (Photo © M.C. Bishop)

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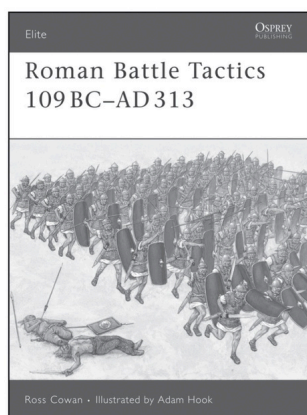
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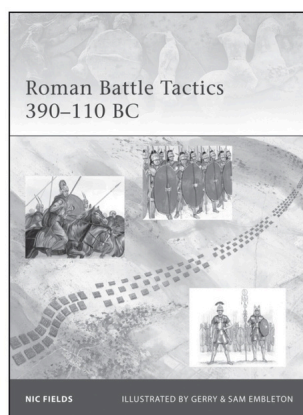
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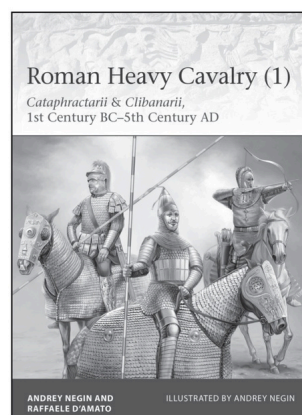
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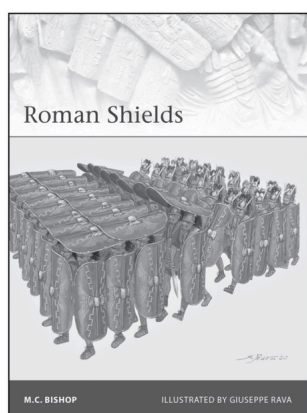
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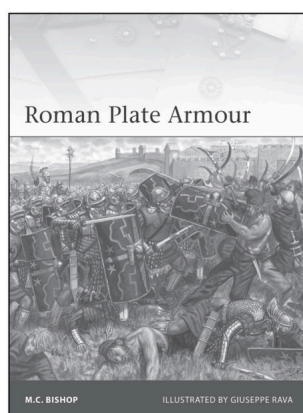
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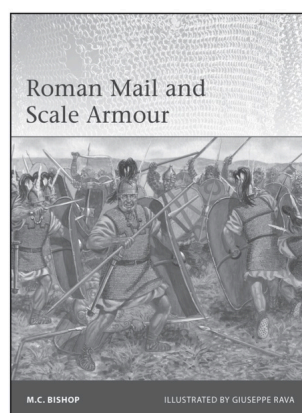
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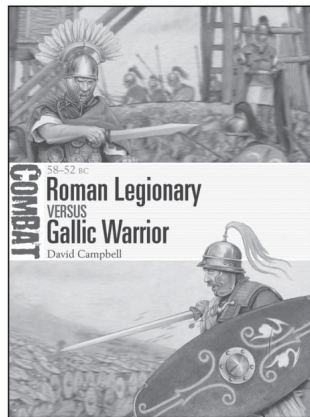


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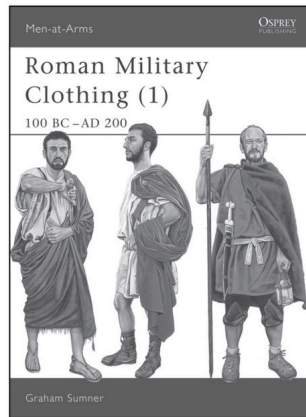


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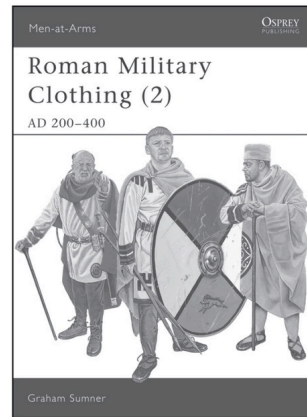
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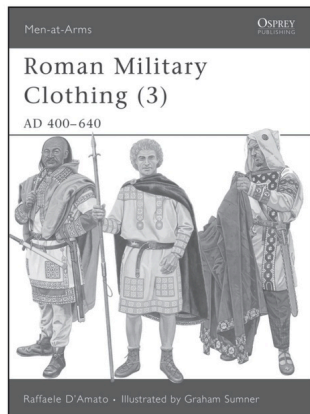
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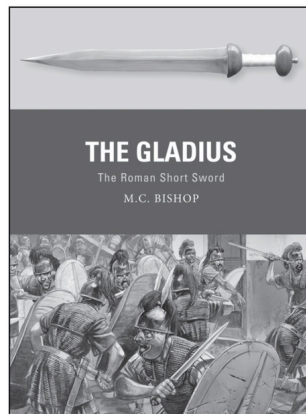
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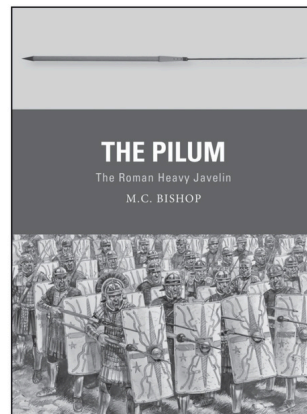
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